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GUIDE TO THE BOTANICAL LITERATURE OF THE
BRITISH EMPIRE.

The primary object of this compilation is to supply useful information on the literature of the systematic, economic, and geographical botany of the Possessions, Dependencies, and Protectorates of the British Empire. Kew is often called upon to answer questions, on the shortest notice, concerning the vegetation of some remote part of the world, and the best books to consult on the subject. Such questions are not always easily answered, and they frequently entail a considerable expenditure of time; hence the idea of preparing a concise guide. A complete bibliography was not wanted, for it would only perplex most persons in search of the latest or best exposition of the botany of any given part of the Empire. As in most cases where a selection has to be made, it is probable that some books and memoirs have been omitted that possess claims and merits equal to some of those included. This may be due either to inadvertence, or, what is more probable in the majority of instances, to the necessity for limiting the selection.

L O N D O N :

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1889.

Price Twopence.

Bentham and Hooker's "Genera Plantarum" and the Indian and various Colonial "Floras" have influenced the selection of elementary works, yet several others are equally as good, and might answer the purpose just as well.

Relatively more space has been devoted to remote islands and little known regions, because the published accounts of their vegetation are often in serials only met with in large libraries.

Persons wishing for further information have only to consult the works cited, where they will usually find references to all the books worth knowing. Taking British India as an example, it would have been of little practical utility to give the titles and descriptions of many of the rare and costly illustrated books. With few exceptions, the reports of the officers of the Indian and Colonial Forest Departments have not been included, though they often contain valuable matter, and should, as well as the consular reports, be searched by persons in quest of information on the vegetable productions of a country.

The Handbooks of the various Colonies prepared for the Indian and Colonial Exhibition in London in 1886 mostly contain useful information on the vegetable products.

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1. ELEMENTARY, INTRODUCTORY, AND OTHER PUBLICATIONS OF A GENERAL CHARACTER.

Hooker, W. J., and J. D. *Icones Plantarum*, vols. i.-xix., 1837-1854; resumed in 1867 and still continued. 8vo, tt. 1900.

Bentham, G. *Outlines of Elementary Botany*. London, 1861. 8vo. pp. 40. This is prefixed to all the Colonial Floras.

Lyell, K. M. (Mrs.). *A Geographical Handbook of all the known Ferns*. London, 1870. 8vo. pp. 225.

Bentham, G., and Hooker, J. D. *Genera Plantarum*. London, 1862-1883. Three vols. 8vo.

Baker, J. G. *On the Geographical Distribution of Ferns: Transactions of the Linnæan Society*, xxvi., 1868, pp. 305-352.

A full tabulation and discussion of the distribution of the species known up to date.

Grisebach, A. H. R. *Vegetation der Erde*. Leipzig, 1872. Two vols. 8vo. (The second edition (1884) is practically no more than a reprint.)

Hooker, W. J., and Baker, J. G. *Synopsis Filicum*. 2nd edition, 1874. pp. 559, tt. 9.

Tchihatchef, P. de. *La Végétation du Globe* . . . par A. H. R. Grisebach, ouvrage traduit de l'Allemand, avec des annotations du traducteur. Paris, 1875-78. Two vols. 8vo.

Le Maout, E., and Decaisne, J. *A General System of Botany, Descriptive and Analytical*. Translated from the French by Mrs. Hooker, with additions by Dr. J. D. Hooker. London, 1873. 4to. pp. 1,066, with 5,500 figures by L. Steinheil and A. Riocreux.

Dyer, W. T. Thiselton. *Lecture on Plant Distribution as a Field for Geographical Research: Proceedings of the Royal Geographical Society*, xxii., No. 6, 1878. Also reprint, 8vo. pp. 36.

Gray, A. *The Botanical Textbook* (sixth edition). Part I. *Structural Botany*. New York and Chicago, 1879.

Dyer, W. T. Thiselton. *The Botanical Enterprise of the Empire*. London, 1880. 8vo. pp. 36.

(A Paper read at the Royal Colonial Institute, May 11, 1880.)

Lindley, J., and Moore, Thos. *The Treasury of Botany*. 2 vols., small 8vo. 2nd edition, 1876.

Admiralty Manual of Scientific Enquiry: Botany, by Sir Joseph Hooker, pp. 418-432, edition 5, 1886.

Hemsley, W. B. *Descriptive Catalogue of Marianne North's Paintings at Kew*. London, 1886, fourth edition, small 8vo. pp. xxxii and 160.

Trendell, A. J. R. *Her Majesty's Colonies*. London, 1886. (Colonial and Indian Exhibition.) 8vo. pp. 508, with several maps.

Baker, J. G. *The Fern Allies*. London, 1887. 8vo.

Oliver, D. *Lessons in Elementary Botany*. London, 1887 edition.

Colonial Office List. Published annually. The edition for the year 1887 is the one used for the present publication.

Hemsley, W. B. *Biologia Centrali-Americana* (Salvin and Godman). Botany. Introduction. 1888. Vol. i., pp. i-lxi. World Distribution of Plants.

Kew Official Publications. *Bulletin of Miscellaneous Information*, monthly. *Guides to the Museums of Economic Botany*.

2. GREAT BRITAIN AND IRELAND.

It is not intended to enter into particulars of the vegetation of the United Kingdom, but it may be useful to persons visiting this country to give the titles of a few of the leading botanical books.

Watson, H. C. *Cybele Britannica; or British Plants and their Geographical Relations.* London, 1847-1859. Four vols. 8vo.

Syme, J. T. Boswell. *English Botany.* London, 1863-86, third edition. Twelve vols. large 8vo, with coloured plates of all the species.

Moore, D., and More, A. G. *Contributions towards a Cybele Hibernica.* Dublin, 1866. Small 8vo. pp. 399.

Moore, D., and More, A. G. *On the Climate, Flora, and Crops of Ireland: Report of the Proceedings of the Botanical Congress,* London, 1866. pp. 165-176.

Trimen, H. *Botanical Bibliography of the British Counties: Journal of Botany,* 1874, pp. 66-73, Cornwall to Surrey and Kent; pp. 108-112, Essex to Gloucester; pp. 155-168, Monmouth to Anglesea; pp. 178-183, Lincoln to Northumberland; pp. 233-238, Scotland.

Babington, C. C. *Manual of British Botany, containing the Flowering Plants and Ferns, arranged according to the Natural Orders.* London, 1881, eighth edition. Small 8vo. pp. 485.

Watson, H. C. *Topographical Botany: Being local and personal Records towards shewing the Distribution of British Plants.* London, 1883, second edition, edited by J. G. Baker and the Rev. W. W. Newbould.

Hooker, J. D. *The Student's Flora of the British Islands.* London, 1884, third edition. Small 8vo. pp. 563.

Fitch, W. H., and Smith, W. G. *Illustrations of British Plants: a Series of Wood Engravings, with dissections.* London, 1886. Second edition. 1,311 engravings.

Bentham, G. *Handbook of the British Flora: a description of the Flowering Plants and Ferns.* London, 1887. Fifth edition, by Sir Joseph Hooker. 8vo. pp. 607.

3. CHANNEL ISLANDS AND MEDITERRANEAN.

HELGOLAND.—An island in the North Sea, in $7^{\circ} 51'$ E. long. and $54^{\circ} 11'$ N. lat., opposite and about twenty-five miles from the mouth of the Elbe. Area, inclusive of the adjacent island, named "Sandy," about three-quarters of a square mile. The main island is a red sandstone cliff about 170 feet high, and inaccessible except in one spot.

Hallier, Ernst. *Die Vegetation auf Helgoland.* Hamburg, 1861. 8vo. pp. 48, with four uncoloured plates.

The enumeration contains 150 species of phanerogams, about a third of which are introduced plants. *Hippophae rhamnoides* and *Lycium barbarum* are the only woody species found in a wild state.

There is also a list of cultivated trees and shrubs, useful to persons planting near the sea.

JERSEY, GUERNSEY, ALDERNEY, and SARK.—The "Channel Islands" are situated between 49° and 50° N. lat., and between 2° and 3° E. long.,

with a maximum elevation of a little over 300 feet. Jersey, the largest, is about eleven miles long by four and a half in breadth, and Sark is three miles long, and a mile and a half in its greatest width. There are several smaller islets.

Babington, C. C. *Primitiæ Floræ Sarnicæ*. London, 1839. 8vo. pp. 132.

The total number of flowering plants and ferns recorded is 848; but this number has been slightly augmented by subsequent discoveries, recorded in various publications.

GIBRALTAR.—At the entrance to the Mediterranean, is about 36° N. lat. and 5° W. long. Area nearly two square miles, and greatest height 1,439 feet.

Kelaart, E. F. *Flora Calpensis*. Contributions to the Botany and Topography of Gibraltar. London, 1846. 8vo. pp. 220, with several views.

Gandoger, M. *Plantes de Gibraltar: Bulletin de la Société Botanique de France*, xxxiv. (1887), pp. 223–227 and 309–313.

Rouy, G. *Plantes de Gibraltar et d'Algeciras: Bulletin de la Société de France*, xxxiv., 1887, pp. 434–446.

A rich and varied flora, considering the smallness of the area, including a number of beautiful plants not known to occur elsewhere. Kelaart enumerates 456 species of indigenous flowering plants and ferns, and reproduces descriptions of new species published by Ed. Boissier in his “*Voyage Botanique dans le Midi de l’Espagne pendant l’année 1837.*”

Gandoger’s lists of plants, collected by Mr. L. Dasoi, add many new discoveries.

It may be desirable to mention that “*Flora Calpensis*” is the nom-de-plume of the author of “*Reminiscences of Gibraltar*,” 1881.

MALTA.—An island in the Mediterranean, about 58 miles from Sicily, and about 180 from the nearest point of Africa. Valetta, the capital, is in $35^{\circ} 54'$ N. lat. and $14^{\circ} 31'$ E. long. Area about 95 square miles. Gozo is about 20 square miles in area, Comino about one, and Fiffa, lying to the south-west, much smaller. The greatest elevation is about 1,200 feet, and there are neither streams nor lakes, hence the indigenous vegetation is poor and scanty.

Wickström, J. E. *Plantæ Melitæ, etc.: Års-Berättelser om Botaniska Arbeten*, 1843–4, Bihang, pp. 57–80.

Grech Delicata, J. C. *Flora Melitensis, sistens Stirpes Phanerogamas*. Malta, 1853. 8vo. pp. xvi and 49.

This work contains a history of the botanical literature of the island, and a list of 716 flowering plants, including colonists. Wickström’s introduction is in French.

Delicata records *Statice reticulata*, *Centaurea crassifolia*, and *Parietaria populifolia* as endemic in Malta, but the first has since been found in Sicily.

CYPRUS.—This island is situated between $34^{\circ} 33'$ and $35^{\circ} 41'$ N. lat., and between $32^{\circ} 15'$ and $34^{\circ} 35'$ E. long., and has an area of 3,596 square miles, the mountains rising to a height of 6,000 feet. The climate is dry, and little of the original forest is left.

Unger, F., and Kotschy, Th. *Die Insel Cypern*. Vienna, 1865. 8vo. pp. 598, with map and views.

Hemsley, W. B. *Gardeners' Chronicle*, n. s. x. (1878), pp. 75, 106, and 183. A summary of the contents of the above-named work.

Wild, A. E. *Report on the Forests of Cyprus*, 1879.

Sintenis, Paul. *Cyprern and seine Flora: Oesterreichische Botanische Zeitschrift*, 1881, 1882. A series of articles extending through these two volumes.

Gaudry, A. *Recherches Scientifiques en Orient*. Paris, 1885. *Partie Agricole*. Zones of Vegetation in Cyprus, pp. 186-202.

Unger and Kotschy's enumeration contains upwards of 1,000 species of flowering plants, including 51 trees, 66 shrubs, and 55 undershrubs.

4. CONTINENTAL TROPICAL AFRICA.

WEST AFRICAN SETTLEMENTS AND PROTECTORATES.—Mostly small territories, alternating with French, Portuguese, and native possessions, from the Gambia river, in about 17° W. long., to the Niger river, in about 7° E. long.

THE GAMBIA SETTLEMENT is in about 13° 24' N. lat., and consists of the Island of St. Mary (Bathurst town), British Combo, the Ceded Mile, and MacCarthy's Island: the last is in the river, 187 miles above Bathurst.

SIERRA LEONE extends from 8° 30' N. lat. to the Republic of Liberia, having a length of 180 miles and an area of 3,000 square miles. It includes Sherboro' Island, Isles de Los, and the Banana, Turtle, Leopard, Plantain, and other islets.

THE GOLD COAST OF ASHANTEE COLONY includes all the British territories between 5° W. long. and 1° 30' E. long., being Newtown, Axim, Dixcove, Secondee, Elmina, Cape Coast Castle, Anamaboe, Accra, Addah, Quittah, Danes, and Afflowhoo. The length of coast line is about 350 miles, and the total area of the British Protectorate about 35,000 square miles.

LAGOS COLONY AND PROTECTORATE is situated between 2° and 6° E. long., in the Gulf of Guinea, and comprises the islands of Lagos and Iddo, Abouta, Mella, Badagry, Palma, and Leckie, and the Kingdoms of Appa, Katanu, Mahin, Ogbo, and Jakri, extending to the Benin river, where the British Protectorate of the Niger commences. Lagos Island has an area of three and three-quarter square miles, and the whole Colony and Protectorate includes about 1,071 square miles.

THE NIGER PROTECTORATE extends over the entire basin of the Lower Niger river, including the Benin and Cross rivers, and eastward to the Rio del Rey, in about 9° E. long., and up the Niger and Binué rivers, to about 10° N. lat., including a belt of 30 miles on each bank of the rivers.

Palisot de Beauvois, A. M. F. J. *Flore d'Oware et de Benin*. Paris, 1804-1807. Two vols. folio, containing 120 coloured plates and descriptive letterpress.

Schumacher, C. F., and Thonning. *Beskrivelse af Guineiske Planter*, 1827. 4to. pp. 466. Extracted from the *Konigl. Dansk Videnskabers Selskabs Skrifter*.

Guillemin, A., Perrottet, S., et Richard, A. *Floræ Senegambiæ Tentamen*. Paris, 1830-33. 4to, with 72 coloured plates. Ranunculaceæ to Myrtaceæ.

Richard, A. *Tentamen Floræ Abyssinicæ*. Paris, 1847-51. Two vols. 8vo, and a folio volume of 102 plates.

Hooker, W. J. *Flora Nigritana*. London, 1849. 8vo.

Oliver, D. *Flora of Tropical Africa*. London, 1868-77. 8vo, 3 vols. Ranunculaceæ to Ebenaceæ.

Bowdich, T. E. *Mission to Ashantee*. London, 1819. 4to. ed. 2, 1873. Botany, by H. Tedlie, pp. 307-374; in ed. 2, pp. 282-286.

Moloney, A. *Sketch of the Forestry of West Africa*. London, 1887. 8vo. pp. 533.

5. SOUTH AFRICA AND ISLANDS.

Under this general heading it is convenient to include the Colony of the Cape of Good Hope, Natal, Bechuanaland, Kaffraria, and the islands off the coast of Great Namaqualand.

CAPE COLONY.—Including the Transkei, this Colony has an area of 213,636 square miles, the most southerly point being in nearly 35° S. lat. From south to north the country, broadly speaking, consists of successively higher terraces, with very different climatic conditions. Real forests exist only in the south-east. Pondoland, Basutoland, and Bechuanaland are under the protection of the Cape or the Imperial Government.

NATAL.—About 800 miles from the Cape of Good Hope, but connected with the latter colony by the protected territories. Situated on the eastern side of South Africa, between 27° and 31° S. lat., and about 28° 50' and 31° 35' E. long., with an area of about 21,000 square miles. The Umzimkulu river and Drakensberg and other mountains form the south-western and western boundaries. The vegetation is sub-tropical in character, and very different from that on the western side of the continent in the same latitude.

Islands off the coast of Great Namaqualand, between 25° and 28° S. lat., attached to the Cape Government:—Hallam's Bird, Mercury, Ichaboe, Seal, Penguin, Halifax, Long, Possession, Albatross, Pomona, Plumpudding and Roastbeef. Walvisch Bay Station is also a Cape dependency. It is in this region that the very singular *Welwitschia mirabilis* is found.

Burchell, W. J. *Travels in the Interior of Southern Africa*. London, 1822-24. Two vols. 4to, illustrated.

Pappe, L. *Floræ Capensis Medicæ*. Cape Town, 1850. ed. 3, 1868. 8vo.

Pappe, L. *Silva Capensis, or a Description of South African Forest-trees and Arborescent Shrubs used for technical economical purposes*. Cape Town, 1854. 8vo. pp. 52.

Pappe, K. W. L., and Rawson, W. *Synopsis Filicum Africæ Australis*. Capetown, 1858. 8vo.

Harvey, W. H., and Sonder, O. W. *Flora Capensis*, being a systematic Description of the Plants of the Cape Colony, Caffraria, and Port Natal, 1859-1862. *Ranunculaceæ* to *Campanulaceæ*.

Harvey, W. H. *Thesaurus Capensis*, or Illustrations of the South African Flora. Dublin, 1859-1863. Two vols. 8vo, containing 200 plates and descriptive letterpress.

Baker, J. G. Descriptive Synopses of various orders of Petaloid Monocotyledons : Journal of the Linnæan Society, vols. xi., xiii., xv., xvi., xviii.

Harvey, W. H. *The Genera of South African Plants*. Cape Town, 1838. Second edition, 1868, edited by J. D. Hooker. 8vo. pp. 483.

MacKen, M. J., and Gerard, W. J. *Synopsis Filicum Capensium*. Pietermaritzburg, 1870. 8vo. pp. 28.

Buchanan, J. Revised list of the Ferns of Natal (reprinted from the "Natal Colonist"). Natal, 1875.

A. M. B. [Lady Barkly]. Revised list of the Ferns of South Africa (reprinted from the "Cape Monthly Magazine"). Cape Town, 1875.

Heywood, A. W. *Cape Woods and Forests*. Official Handbook, Indian and Colonial Exhibition, 1886. pp. 139-153.

Bolus, H. Sketch of the Flora of South Africa : Official Handbook of the Cape of Good Hope, Indian and Colonial Exhibition, 1886. There is also a reprint. 8vo, pp. 32.

Bolus, H. Contributions to South African Botany : Journal of the Linnean Society, vols. xviii., xix., xx., xxii., xxiv., and xxv.

Bolus, H. The Orchids of the Cape Peninsula : Transactions of the South African Philosophical Society, 1888, part 1 ; also issued separately. 8vo. pp. 200, with 36 plates, partly coloured.

Baker, J. G. *Handbook of the Amaryllideæ*. London, 1888. 8vo.

Wood, J. Medley. *An Analytical Key to the Natural Orders and Genera of the Natal Indigenous Plants*. Durban, 1888.

6. ASCENSION, ST. HELENA, TRISTAN DA CUNHA, FALKLANDS, AND SOUTH GEORGIA.

ASCENSION.—A volcanic, nearly circular island, in the South Atlantic, in lat. $7^{\circ} 57'$ S. and long. $14^{\circ} 28'$ W. It is thirty-four square miles in extent, rising to a height of 2,870 feet, and very barren, in consequence of the great scarcity of water. There are neither native trees nor shrubs, and very few herbaceous plants, though two, *Hedyotis adscensionis* and *Euphorbia origanoides*, are peculiar to the island. A dozen species of ferns inhabit the green mountain. Various plants have become naturalised.

Hemsley, W. B. Botany of the "Challenger" Expedition, Botany i., part 2, pp. 31-48, plates 16 and 17. 1884.

Gill, Mrs. *Six Months in Ascension*. 1885.

ST. HELENA.—Situated in the South Atlantic, in $15^{\circ} 55'$ S. latitude and $5^{\circ} 42'$ W. longitude, and ten miles long by eight broad, rising to a height of 2,700 feet. It is wholly volcanic, and very rugged. When first

discovered, it was clothed with vegetation; but the early settlers and goats combined destroyed it all, except in a very limited area, on the highest part of the island, and its place is now occupied by plants of more vigorous constitution from various countries. English oaks, Scotch pines, and gorse are now prominent in the landscape; the last being so abundant that many of the natives obtain their living from cutting it for fuel. The original vegetation consisted almost entirely of endemic plants, some of which are quite extinct, and the remainder seemed doomed to the same fate.

Melliss, J. C. St. Helena: a Physical . . . Description of the Island . . . its Fauna and Flora. . . London 1875. Large 8vo. pp. 426, 56 coloured plates.

Morris, D. A Report upon the present Position and Prospects of the Agricultural Resources of the Island of St. Helena, with a map showing the three zones of Vegetation. Colonial Office, 1884.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., part 2, 49-122, plates 18-22, and 48-51. 1884.

Melliss's book contains coloured figures of nearly all the indigenous flowering plants, and much information concerning their habitats. The "Challenger" Report is a complete enumeration, synonymy, &c. of all the indigenous plants; a few of which are described and figured for the first time. It also deals with the question of distribution.

TRISTAN DA CUNHA.—This, together with Inaccessible and Nightingale Islands and a few outlying islets, forms a group in about 37° S. lat. and 12° W. long. The principal island has an area of only sixteen square miles, yet it rises to a height of 8,000 feet. Penguins abound, and the vegetation is sufficient to support a few cattle and sheep kept by the very small community of this remote speck of land.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., part 2, pp. 133-185, plates 25-38. 1884.

The two most prominent plants in the vegetation, *Phylica nitida*, a small tree, and *Spartina arundinacea*, a stout reed, are equally so in the distant Amsterdam Island.

Diego Alvarez, or Gough Island, in about 40° 30' S. lat. and 10° W. long., has not been botanically explored; but a Tristan settler, who had lived for months in the island, assured Professor Moseley, that the same flowering plants, including the *Phylica*, grow there as in Tristan da Cunha.

FALKLAND ISLANDS.—Situated in the South Atlantic, between 51° and 53° S. lat., and between 57° and 62° W. long. East Falkland has an area of 3,000 square miles, and West Falkland of 2,300 square miles; and the rest of the islands, about a hundred in number, have an area of nearly 1,000 square miles. Mount Adam, the highest ground in the colony, rises 2,315 feet above the level of the sea. The climate is healthy, and the range of temperature is from 30° to 50° in winter, and from 40° to 65° in summer. There are no trees, but the herbaceous vegetation is said to present a great variety of sweet-scented flowers.

Hooker, J. D. Flora Antarctica, part 2. London, 1847. 4to, with numerous plates.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., Introduction (1885), pp. 58-62.

Sir Joseph Hooker's work consists of descriptions of all the species then known (very few have been added since), and figures of a large

number of them. The Botany of the "Challenger" contains a complete list, with full particulars of the distribution of all the species. There are 115 species belonging to eighty-four genera, none of which is endemic. Leguminosæ are wholly wanting, as they also are in all the islands in high southern latitudes, eastward to Macquarie and the Chatham group. *Bolax glebaria*, the Balsam-bog, and *Poa flabellata*, syn. *Dactylis cæspitosa*, the Tussock grass, are two of the most conspicuous and remarkable plants in the vegetation. The former grows in large dense hemispherical masses; and the latter is a tall elegant grass, growing gregariously and "resembling groves of miniature palms." The "tea plant," a dwarf myrtle, bears a fleshy edible fruit in great abundance, and its leaves are used as a substitute for tea. Associated with the foregoing are a dwarf *Rubus* with an edible fruit, common Thrift, and a Primrose, the only one in the southern hemisphere, and so closely allied to the British *Primula farinosa* as to have been regarded a variety of it.

SOUTH GEORGIA.—An uninhabited island, a dependency of the Falklands, explored and taken possession of by Captain Cook in 1775. It is situated about a thousand miles east of Cape Horn, in 54° 30' S. lat. and 36° to 38° W. long.; and the rugged mountains are covered with permanent snows and glaciers. A German expedition for observing the transit of Venus landed there in August 1882, and remained until September 1883; and Dr. Will, one of the officers, investigated the very scanty vegetation.

Engler, A. Die Phanerogamenflora von Süd-Georgien: Jahrbücher, vi., 1886, pp. 281–285.

Hemsley, W. B. Vegetation of South Georgia: Nature, xxxiv. (1886), p. 106. A summary of the foregoing, to which is added the general distribution of all the species.

Thirteen species were collected, including the Tussock grass and the northern *Phleum alpinum*. None of the plants are peculiar to the island, and most of them have a wide range in the southern hemisphere; one, *Colobanthus subulatus*, extending from Fuegia to the Australian Alps.

7. ADEN, SOCOTRA, PERIM, AND OTHER ISLANDS OF THE RED SEA AND ARABIAN COAST.

ADEN.—On the south coast of Arabia, about 100 miles eastward of the Strait of Babelmandeb, in 12° 47' N. lat. Area about 70 square miles, and rocky and barren in the extreme. It is excessively hot, and the annual rainfall varies from six or seven inches to nothing, hence the vegetation is very sparse.

Anderson, T. Florula Adenensis: Journal of the Linnean Society, v. (1860), Supplement, pp. xxiv and 47. With six plates.

Marchesetti, C. Ein Ausflug nach Aden: Oesterreichische Botanische Zeitschrift, 1881, pp. 19–23. A sketch of the aspects of the vegetation.

Deflers, A. Herborisations dans les Montagnes Volcaniques d'Aden: Bulletin de la Société Botanique de France, xxxii. (1885), pp. 343–356; and xxxiv. (1887), pp. 61–69.

Anderson's "Florula" contains about 100 species of flowering plants, to which Defflers adds 70. There is a considerable endemic element, and some very singular plants, such as the *Adenium obesum*, the Arabic name of which is said to be "Aden."

PERIM at the mouth of the Red Sea; the Umshah group of coral reefs off the coast of Abyssinia, and the Kuriyan-Muriyan, including Hallaniya, off the south-east coast of Arabia, in about 57° E. long., are under British subjection. No record of the vegetation of any of them has been found.

ZEILA, Bulhar, Berbera, and Lasgori are British stations on the African coast, nearly opposite Aden.

SOCOTRA. — This island lies between $12^{\circ} 19'$ and $12^{\circ} 42'$ N. lat., and between $53^{\circ} 20'$ and $54^{\circ} 30'$ E. long., being about seventy-two miles from east to west, and twenty-two in breadth. It is very mountainous, though the highest peaks do not much exceed 4,000 feet. Previous to 1880 little was known of the botany, but since that date Dr. Bayley Balfour and Dr. Schweinfurth have investigated it.

Kuhn, M., and Nordstedt, O. Ueber Farne und Charen der Insel Socotra: Berichte der deutschen botanischen Gesellschaft, i. (1883), pp. 238-242, with woodcuts.

Balfour, I. B. On the Island of Socotra: Report of the British Association, 1881.

Balfour, I. B. The Island of Socotra and its recent Revelations: Proceedings of the Royal Institution of Great Britain, 1883.

Balfour, I. B. Botany of Socotra: Transactions of the Royal Society of Edinburgh, xxxi., 1883-8, pp. lxxv and 446, tt. 100.

Dr. Balfour estimates the known phanerogams at about 600 species. There are many singular plants among them, such as *Dendrosicyos* (an arboreous Cucurbitacea), *Adenium multiflorum*, *Dorstenia gigas*, *Dracæna*, *Aloe*, *Euphorbia* (arboreous species), and many others.

8. MAURITIUS, RODRIGUES, SEYCHELLES, AMSTERDAM, AND OTHER ISLANDS OF THE INDIAN OCEAN.

MAURITIUS.—Situated two degrees within the southern tropic, and between 19° and 20° E. long., with an area of 700 square miles, and an altitude of 2,900 feet. When first settled it was covered with forest down to the sea shore, but very little of it now remains, and introduced plants have largely replaced indigenous species.

The small islands to the northward named Gunner's Quoin, Flat Gabriel, Round, and Serpent, belong to Mauritius.

Baker, J. G. Flora of Mauritius and the Seychelles. London, 1877. 8vo. pp. 557.

The number of indigenous flowering plants described by Mr. Baker is 705; and the ferns and allies number 164, a higher proportion than in almost any other part of the world. Many of the most interesting endemic trees and shrubs, such as the *Monimiaceæ*, have been entirely exterminated or are now extremely rare. Here, as in the Seychelles, endemic species of palms and screw-pines are a conspicuous feature in the scenery.

Horne, J. Notes on the Flora of Flat Island. Mauritius, 1886. Folio. pp. 4.

RODRIGUES.—Situated in $19^{\circ} 41'$ S. lat. and $63^{\circ} 23'$ E. long., and eighteen miles long by seven miles broad. It is volcanic, and the greatest altitude is a little more than a thousand feet. Formerly the island was covered with forest, but much of the native vegetation has disappeared before cultivation, and now some introduced plants are commoner than the native. Mr. J. G. Baker included Rodrigues in his "Flora of Mauritius."

Balfour, Dr. I. B. Botany of Rodrigues: Philosophical Transactions of the Royal Society of London, clxvii. (1879), pp. 302-387, tt. 19-36. There is also a separately paged reprint.

Dr. Balfour collected 189 species of flowering plants which he regarded as indigenous. Remarkable among them are three species of Palms, two Screw-pines, an Aloe, and *Mathurina penduliflora*, an arboreal Turneracea, most nearly allied to the Central American *Erblichia odorata*. A marked feature in the vegetation is the great diversity in size and shape exhibited by the leaves of many plants at different periods of their growth.

CHAGOS ARCHIPELAGO.—A group of islands in the Indian Ocean, in the same longitude as the Maldivé and Laccadive islands, and in about 5° S. lat. Diego Garcia, the principal island, is an atoll fourteen miles long, by six miles and a half wide, entirely of coral formation, and nowhere rising more than ten feet above high tide, excepting in a few places where the sand has drifted.

Hemsley, W. B. Report on the Vegetation of Diego Garcia: Journal of the Linnæan Society, xxii. (1886), pp. 332-340.

This report was based on collections of plants made by Mr. A. Hume and Mr. G. C. Bourne, F.L.S. They comprise thirty-six flowering plants and seven ferns, mostly of very wide distribution and none endemic. Formerly the islands were covered with forests of *Azalia bijuga*, *Terminalia Catappa*, *Cordia subcordata*, and a few other smaller trees, but there are few large trees left now. The Coconut Palm is prominent here, as it is in most of the islands of this region.

SEYCHELLES.—A group of upwards of thirty islands, mostly very small, lying between 3° to 6° S. lat., and 900 miles north of Mauritius. Mahé has an area of 30,000 acres, is seventeen miles long, and the central mountains rise to a height of 3,000 feet. Next in size are: Praslin, 8,000 acres; Silhouette, 5,700 acres; La Digue, 2,000 acres; and Curieuse, 1,000 acres. The mountains of Silhouette are 2,500 feet high, but none of the others exceed 1,500 feet above sea-level. Bird, Frigate, Dennis, North, Aride, The Sisters, Félicité, St. Anne's, and Stag are the names of other islands of this group.

Baker, J. G. Flora of Mauritius and the Seychelles. London, 1877.

The indigenous flora of the Seychelles comprises 258 species of flowering plants and 80 ferns and lycopods, associated with which is a large number of introduced plants. Foremost in interest are the Palms, of which there are seven or eight species belonging to as many different genera, six of which are monotypic, and exclusively confined to these islands. Famous among the Palms is the Coco de Mer, or Double Coconut. The Screw-pines (*Pandanus*) are abundant, and there are three or four very distinct species. One species of Pitcherplant (*Nepenthes*), a leafless Vanilla, and the Capucin tree are other interesting endemic plants.

AMIRANTES ISLANDS.—A group of small islands a little south-west of the Seychelles. The principal islands are Poivre, African, Eagle, Darros, Isle des Roches, and Boudouse. A little farther south, in about 7° S. lat., is Alphonse Island, and eastward, in about $56^{\circ} 15'$ E. long., is Coetivy Island; and Platte Island is in 6° S. They produce little besides coconuts.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., Introduction, pp. 16–17.

The vegetation consists of a few species, almost all of wide range in maritime districts, and none of them endemic.

ALDEBRA.—A group of coralline islands, about 30,000 acres in extent, to the north-west of Madagascar, in about $9^{\circ} 30'$ S. lat. They are only about 200 feet high; the shore is fringed with mangroves, and the whole surface covered with forest which has not been botanically investigated. The group consists of West, Middle, South, and Euphrates islands.

ASSUMPTION, Astove, St. Pierre, Providence, Cerf, and Farquhar are small islands near Aldebra, concerning which little is known, though they are claimed as dependencies of Mauritius. Farther to the east is Galega or Agalega, and southward, in 15° to 17° S. lat., the Cargados or St. Brandon group, including Albatross, Tromelin, and Coco Islands.

THE GLORIOSO GROUP, much nearer Madagascar, in about $11^{\circ} 20'$ S. lat. and $47^{\circ} 20'$ E. long., is also regarded as British. They are Dulise, Verte, and Glorieuse.

THE COSMOLEDO GROUP consists of North, South, Polyte, Wizard, and Menai islands.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., Introduction, pp. 16–17.

AMSTERDAM and St. PAUL ISLANDS.—These islands are very remote from any other land, except Kerguelen, and that is nearly 10 degrees distant. They are situated between 37° and 39° S. lat., and in about $77^{\circ} 30'$ E. long., and are of volcanic origin. Amsterdam is about six miles across, rising to a height of 2,760 feet; and St. Paul is about a quarter of that size, with an elevation of 840 feet.

Hooker, J. D. Enumeration of the Plants of Amsterdam and St. Paul Islands: Journal of the Linnean Society, xiv., p. 475.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., 2, pp. 259–281, tt. 41–45 and 52.

Altogether thirty-eight vascular plants are known to exist in these islands, half of which are Flowering Plants and half Ferns and Lycopods. There is no endemic genus, but nine of the species of Flowering Plants have not been found elsewhere. *Phyllica nitida*, a small tree, and *Spartina arundinacea*, a reed, are the commonest plants here as well as in the Tristan da Cunha group.

KERGUELEN ISLAND.—This island is claimed as a French possession in Bayle's "Atlas Coloniale," but it does not appear to have been formally annexed. It is situated between $48^{\circ} 39'$ and $49^{\circ} 44'$ S. lat., and in $68^{\circ} 30'$ to $70^{\circ} 30'$ E. long.

Hooker, J. D. Flora of Kerguelen Island: Philosophical Transactions of the Royal Society of London, clxviii., pp. 5–93, tt. 1–5.

Hemsley, W. B. Botany of the "Challenger" Expedition, i. 2, pp. 211–281.

Vegetation sparse and wholly herbaceous, one of the commonest plants being the famous "Kerguelen cabbage," *Pringlea antiscorbutica*, which is also found in the Crozets and in Heard Island.

9. BRITISH INDIA, EXCLUSIVE OF ISLANDS.

BRITISH INDIA.—Including Burma, this extends from a little west of the Indus (Afghanistan and Baluchistan) to China and Siam in the east, or from about 67° to 100° E. long., and from 36° to 8° N. lat., and presents the greatest diversity of soil and climate. On the north are the highest mountains in the world, Mount Everest being a little more than 29,000 feet, or upwards of five miles and a half high.

The following statistics of the Flowering Plants in the Flora of British India appear in the Introduction to the Botany of Salvin and Godman's "Biologia Centrali-Americana." Orders, 174; genera, 2,271; species, 13,647. Of these, 304 genera and 9,370 species are endemic. The Orchideæ are the most numerous in species, considerably exceeding a thousand. Next come the Leguminosæ, followed by the Gramineæ, Euphorbiaceæ, Rubiaceæ, Compositæ, Acanthaceæ, Cyperaceæ, Labiataæ, Urticaceæ, &c., in the sequence placed.

PUBLICATIONS RELATING TO INDIA GENERALLY.

Roxburgh, W. Flora Indica, or Descriptions of Indian Plants. Serampore, 1832. 3 vols. 8vo. A second edition, edited by C. B. Clarke, Calcutta, 1874. Large 8vo, pp. 763. Reprinted literature with references to the volumes and pages of the original.

Wight, R. Icones Plantarum Indię Orientalis. Madras, 1840-1853. Six vols. 4to, 2,101 plates, with descriptive letterpress.

Hooker, J. D., and Thomson, T. Flora Indica: being a systematic account of the Plants of British India. London, 1855. Vol. i. Ranunculaceæ to Fumariaceæ, with an Introductory Essay: all that has appeared. 8vo. pp. 280 and 285, with a map. Valuable for the Essay.

Balfour, E. Cyclopædia of India Products of the Vegetable Kingdom. Madras, 1857. 8vo.

Beddome, R. H. The Ferns of British India, being Figures and Descriptions of Ferns from all parts of British India (exclusive of those figured in the "Ferns of Southern India and Ceylon"). Madras, 1865-1870. 4to. 345 plates, with descriptive letterpress.

Day, K. L. The Indigenous Drugs of India. Calcutta, 1867. 8vo.

Watson, J. F. List of Indian Products (the Vegetable Products, by M. C. Cooke). London, 1872. 4to.

Drury, H. The Useful Plants of India. 2nd edition. London, 1873. 8vo. pp. 512.

Balfour, E. Timber Trees of India, &c. Madras, 1870, ed. 3. 8vo.

Hooker, J. D. Flora of British India. London, 1875-1887. 8vo. Vols. i.-iv. completed, vol. v. in course of being issued, bringing the work down to the Orchid.

Clarke, C. B. *Compositæ Indicæ*. Calcutta, 1876. 8vo.

Beddome, R. H. Supplement to the "Ferns of Southern India" and the "Ferns of British India," containing a revised list of all the species and 45 plates of previously unfigured species. Madras, 1876. 4to.

Oliver, D. *First Book of Indian Botany*. London.

Gamble, J. S. *A Manual of Indian Timbers*. Calcutta, 1881. 8vo. pp. 522, with a map showing the mean annual distribution of the rainfall.

Beddome, R. H. *Handbook to the Ferns of British India, Ceylon, and the Malay Peninsula*. Calcutta, 1883. Small 8vo. pp. 500, with 300 illustrations.

King, G. The species of *Ficus* of the Indo-Malayan and Chinese Countries. *Annals of the Royal Botanic Garden, Calcutta*, vol. i. 1886-8. 4to. pp. 185, tt. 225.

A similar work, by the same author, on the oaks of this region is in the press.

Hemsley, W. B. *Biologia Centrali-Americana, Botany*, i. "Introduction" (1888), pp. xiv-xxvi. A statistical comparison of the flora of India with the floras of Australia and Mexico.

NORTH-WESTERN INDIA.

Thomson, T. *Western Himalaya and Tibet*. London, 1852. 8vo. pp. 501, illustrated.

Stewart, J. Lindsay. *Punjab Plants, comprising Botanical and Vernacular Names and Uses of most of the Trees, Shrubs, and Herbs of economical value growing within the Province*. Lahore, 1869. 8vo. pp. 375.

Aitchison, J. E. T. *Catalogue of the Plants of the Punjab and Sindh*. London, 1869. 8vo.

Atkinson, E. T. *Economic Products of the North-western Provinces, 1876-1881*.

Stewart, J. Lindsay, and Brandis, D. *The Forest Flora of North-west and Central India*. London, 1874. 8vo. pp. 608.

Stewart, J. Lindsay, and Brandis, D. *Illustrations of the Forest Flora of North-west and Central India, drawn by W. H. Fitch*. London, 1874. 4to. 72 plates.

Duthie, J. F. *Illustrations of the Indigenous Fodder Grasses of the Plains of North-western India*. Roorkee, 1886. Folio. 40 plates.

Dr. Aitchison's reports on the botanical collections he made during the Afghan campaign and while attached to the Boundary Commission will be found useful. They appeared in the *Journal of the Linnean Society*, vols. xviii. and xix., and *Transactions*, 2nd series Botany, vol. iii.

BENGAL, &c.

Hooker, J. D. *Himalayan Journals*. London, 1854. Two vols. 8vo, illustrated.

Hooker, J. D. *Rhododendrons of Sikkim-Himalaya*. London, 1849-51. Folio. 30 coloured plates and text.

Clarke, C. B. Commelynaceæ et Cyrtandraceæ Bengalenses. Calcutta, 1874. Folio. 93 plates, with descriptive letterpress.

Hunter, W. W. A Statistical Account of Bengal. London, 1877. 8vo. Vol. xx. (pp. 121–227) contains a catalogue of the Plants of Bengal, by Dr. G. King.

Clarke, C. B. On the Ferns of Northern India : Transactions of the Linnæan Society, n. s. Botany, i., pp. 425–611, tt. 49–84.

Blandford, H. F. Ferns of Simla : Journal of the Asiatic Society of Bengal, 1889, lvii., 2, pp. 294–315.

Clarke, C. B. On the Plants of Kohima and Muneypore : Journal of the Linnean Society, xxv., 1889, pp. 107, tt. 1–44.

BOMBAY.

Dalzell, N. A., and Gibson, A. The Bombay Flora, or short Descriptions of all the Indigenous Plants. Bombay, 1861. Small 8vo. pp. 332. Supplement, pp. 112.

Birdwood, G. C. M. Catalogue of the Vegetable Productions of the Presidency of Bombay. Bombay, 1865, ed. 2. 8vo.

Campbell, J. M. Gazetteer of the Bombay Presidency, Botany, vol. xxv. Bombay, 1886.

MADRAS.

Wight, R. Illustrations of Indian Plants. Madras, 1840–1850. Two vols. 4to, 182 coloured plates and letterpress.

Beddome, R. H. The Ferns of Southern India, being Descriptions and Plates of the Ferns of the Madras Presidency. Madras, 1863. 4to, 271 plates with descriptive letterpress.

Beddome, R. H. The Flora Sylvatica for Southern India. Madras, 1869–1874. Two vols. 4to, consisting of 330 plates and descriptive letterpress.

Beddome, R. H. The Forester's Manual of Botany for Southern India. Madras, 1874. 4to. pp. 238, with 29 plates of analyses of Genera.

Beddome, R. H. Icones Plantarum Indiæ Orientalis, or Plates and Descriptions of New and Rare Plants from Southern India and Ceylon. Madras, 1874. 4to, 300 plates and descriptive letterpress.

BURMA.

Kurz, S. Forest Flora of British Burma. Calcutta, 1877. Two vols. 8vo.

Mason, F. Burma, its People and Productions, or Notes on the Fauna, Flora, and Minerals of Tenasserim, Pegu, and Burma. Hertford, 1883. Vol. ii., Botany, by W. Theobald. 8vo. pp. 787.

[An account is in preparation of a highly interesting collection of plants, made by General Collett, in the Shan States, Upper Burma. It will probably appear in the Journal of the Linnean Society.]

10. CEYLON, LACCADIVES, MALDIVES, ANDAMANS, NICOBARS, STRAITS SETTLEMENTS, KEELING OR COCOS ISLANDS, CHRISTMAS ISLAND, BRITISH NORTH BORNEO, HONGKONG, AND PORT HAMILTON.

CEYLON.—Situating between 6° and 10° N. lat. and 79° and 82° E. long., with an extreme length, from north to south, of 266 miles, and an area of 24,702 square miles. There is a central mountain range rising to a height of upwards of 8,000 feet. Vegetation luxuriant and varied, and containing a large number of endemic forms.

Ferguson, W. A descriptive list of Ceylon Timber Trees, reprinted from Ferguson's Ceylon Directory for 1863, pp. 225-257.

Thwaites, G. H. K. Enumeratio Plantarum Zeyloniæ. London, 1864. 8vo. pp. 483.

Trimen, H. Systematic Catalogue of the Flowering Plants and Ferns of Ceylon. Colombo, 1885. 8vo. pp. 137.

Trimen, H. Notes on Ceylon Plants: Journal of Botany, 1885 and 1889. A series of descriptive papers.

Ceylon Vegetable Products. Handbook for Ceylon, Colonial and Indian Exhibition, 1886.

The plants of Ceylon are also included in Hooker's "Flora of British India." About 3,000 species are recorded, and they are referred to 1,070 genera and 156 natural orders. The almost exclusively Asiatic order, Dipterocarpeæ, is very largely developed in the island, and nearly all of the species are endemic. There is one species of *Nepenthes* (Pitcher Plant), and one species of the essentially Australian genus, *Stylidium*.

LACCADIVE and MALDIVE ISLANDS.—A chain of low islands lying to the west of India and stretching from about 13° N. to 1° S. lat. The largest of the thirty-two islands of the former group is seven miles long and two and a half broad; and Mali, the largest in the latter, is seven miles in circumference. There are seventeen groups of the Maldives. The indigenous vegetation is doubtless very scanty and poor in species, but there appears to be no record of the plants of these islands. There are a few plants from the Laccadives in the Kew Herbarium.

ANDAMAN and NICOBAR ISLANDS.—A chain of Islands, opposite the coast of Martaban, in the Indian Ocean, between 7° and 14° N. lat., and 92° to 94° E. long. The principal islands, proceeding from north to south, are North Andaman, Middle Andaman, and South Andaman (which are only separated by narrow channels), Little Andaman, Kar Nicobar, Kamorta, Katchal, Little Nicobar, and Great Nicobar. Among the smaller ones are: Great Cocos, Little Cocos, Landfall, Interview, Sound, Barren, Chatham, North Sentinel, South Sentinel, Cinque, Passage, Sisters, Brothers, Batti Malve, Tillandiyong, Chowrey, Bom-poka, Teressa, Trinkut, and Meroe. These islands, which nowhere attain a sufficient elevation to affect materially the character of the vegetation, have only been very partially explored botanically.

Kurz, S. Report on the Vegetation of the Andaman Islands. Calcutta, 1870. Folio. pp. 75.

Kurz, S. Descriptions of New Plants from the Nicobar and Andaman Islands: Journal of Botany, 1875, pp. 321-333, tt. 169-171.

Kurz, S. A Sketch of the Vegetation of the Nicobar Islands: Journal of the Asiatic Society of Bengal, xlv. (1876), 2, pp. 105-164, tt. 12-13.

Kurz collected 596 species of flowering plants in the Andamans, 520 of which he regarded as indigenous, and 34 are described as new. They are distributed among 300 genera, none of which is peculiar to the islands. The enumeration of Nicobar Plants, flowering plants and ferns, contains 624 species, some of which are obviously colonists.

STRAITS SETTLEMENTS.—Under this denomination are included the Island of Penang, the Province of Wellesley on the mainland opposite, the Dindings and Perak, Malacca, Singapore, and the Keeling or Cocos Islands.

Although these regions were more or less explored by the early Indian botanists, there has been no separate publication on their vegetable products. They are included in the "Flora of British India," and much of the arboreous element is described in Kurz's "Forest Flora of British Burma." Kurz also gives a list of the plants of Singapore in the Report, cited above, on the vegetation of the Andaman Islands.

PENANG, or Prince of Wales Island, is about 106 square miles in extent, with a range of hills 2,400 feet high. It is 360 miles from Singapore, in about 5° N. lat. and 100° E. long. The Province of Wellesley, on the mainland opposite, is about 45 miles in length, by eight to ten in breadth.

MALACCA is situated on the mainland between Penang and Singapore. It is in about 2° 10' N. lat. and 102° 14' E. long., and has an area of 659 square miles.

SINGAPORE is an island about twenty-seven miles long, by fourteen wide, embracing an area of 206 square miles. The surface is undulating, and 50 to 200 feet above the level of the sea. Singapore town is in 1° 16' N. lat. and 103° 53' E. long.

PERAK.—The protected State of Perak is situated between 3° 45' and 5° 29' N. lat., and 100° 22' to 101° 40' E. long., with an estimated area of 7,949 square miles, and a maximum elevation of between 7,000 and 8,000 feet. Vegetation rich and varied, including a large endemic element. A few odd plants have been published in Hooker's *Icones Plantarum* and the *Journal of Botany* for 1887. Sir Joseph Hooker and Dr. G. King are engaged upon a Flora of the region; meanwhile Kurz's Forest Flora of British Burma will be found useful.

SELANGOR and **SUNGEI UJONG** are protected States lying to the south of Perak, the former having an area of about 3,000 square miles, and the latter about 660. There are no special reports on the vegetation.

KEELING OR COCOS ISLANDS.—A group of small islands 600 miles distant from Java, the nearest land, in about 12° S. lat. and 97° E. long. They contain large plantations of coconut palms, the cultivation of which is the only industry. Darwin visited them in 1836, H. O. Forbes in 1878, and Dr. Guppy in 1888. The largest island is about five miles long and a quarter of a mile broad.

Henslow, Rev. J. S. *Florula Keelingensis: Annals of Natural History*, i., 1838, pp. 337-347. Plants collected by Darwin.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., part 3, p. 113. List of the plants collected by Darwin, with remarks on their distribution.

Forbes, H. O. List of Plants observed in the Keeling Islands: A Naturalist's Wanderings in the Eastern Archipelago, 1885, pp. 42-43.

At the time Darwin visited the group there were considerable woods of *Cordia subcordata* and *Pemphis acidula*, but in 1878 they had almost

wholly disappeared, and the ground was occupied by coconut palms. Darwin collected nineteen species of flowering plants, to which Forbes added a few more herbaceous species. None of the plants are endemic: the two described by Henslow as new proving to be forms of widely dispersed species.

Dr. Guppy is engaged upon a much fuller account of the vegetation than has hitherto appeared.

CHRISTMAS ISLAND.—A small rocky island 1,580 feet high, about 12 miles across, and 200 miles from the nearest point of Java, in about $10^{\circ} 30'$ S. lat. and 106° E. long. It is densely wooded, and some of the trees are of large dimensions. The flora is essentially the same as that of the nearest Malayan islands, with a few peculiar species.

Hemsley, W. B. Report on the Vegetation of Christmas Island, Indian Ocean: Journal of the Linnæan Society, xxv. (1889).

LABUAN.—An island on the north-west coast of Borneo, situated in about $5^{\circ} 20'$ N. lat., and $115^{\circ} 20'$ E. long., with an area of 30 square miles. Mr. James Motley made a considerable collection of plants in the island many years ago, and they are in the Kew Herbarium, but no list of them has been published. It is now included in the territory of British North Borneo.

BRITISH NORTH BORNEO OR SABAH.—This comprises an area of 31,000 square miles, lying between 4° and $7^{\circ} 30'$ N. lat., and about $115^{\circ} 8'$ to $119^{\circ} 16'$ E. long. The country is densely clothed with vegetation, and there is much valuable timber, though botanically it is little known.

Miquel, F. A. W. Flora Indiæ Batavæ. Amsterdam, 1855. 3 vols. 8vo.

Beccari, O. Malesia: Raccolta di Osservazioni Botaniche intorno alle Piante dell' Arcipelago Indo-Malese e Papuano. Genoa, 1877 to 1887. 4to. 3 vols., illustrated.

Burbidge, F. W. The Gardens of the Sun, or a Naturalist's Journal on the mountains and in the forests and swamps of Borneo. London, 1880. 8vo. pp. 364, illustrated. Contains much interesting matter relating to the vegetation of North Borneo.

Alcock, Rutherford. Handbook of British North Borneo, Indian and Colonial Exhibition, 1886.

Baker, J. G. The Ferns of North Borneo: Journal of the Linnæan Society, xxii., pp. 222–232. 1886.

Among the larger islands of the territory are Labuan, Balambangan, Banguey, Jambongan, Timbu Mata, Sebattik, East Noenoekan, Kali Babang, Gaya (East), Tambisan, Mallawalle, Gaya (West), and Shoal.

HONGKONG.—Situated at the mouth of the Canton river, China, between $22^{\circ} 1'$ and $22^{\circ} 9'$ N. lat., and between $114^{\circ} 5'$ and $114^{\circ} 18'$ E. long. It is very irregular in outline and surface, and has an area of a little more than 29 square miles, and a maximum elevation of between 1,700 and 1,800 feet. The opposite peninsula of Kowloon forms a part of the same colony. The deep narrow ravines of Hongkong shelter a rich and extremely varied vegetation, and many of the genera and species have hitherto not been found elsewhere.

Bentham, G. Flora Hongkongensis. London, 1861. 8vo. pp. 482. with a map of the island,

Hance, H. F. *Floræ Hongkongensis Supplementum*: Journal of the Linnean Society, xiii. (1873), pp. 95-144.

Ford, C. List of Additions to the Hongkong Flora: Report to His Excellency the Governor, 1885, Appendix, pp. 2.

Forbes, F. B., and Hemsley, W. B. *Index Floræ Sinensis*: Journal of the Linnean Society, xxiii., 1886-1888, and xxvi., 1889, not yet completed.

Bentham enumerates a thousand species belonging to 550 genera and 125 natural orders; and the proportion of woody to herbaceous species is as 1 to 2.1. Out of the thousand species, 160 had not, at that date, been found elsewhere, and although recent explorations in various parts of the mainland have revealed the existence of some of them in other localities, the majority are still only known to inhabit Hongkong. Nearly 200 species have been added to the flora since the publication of Bentham's book.

PORT HAMILTON.—A small island off the south coast of Corea, in 34° N. lat. and about 127° 20' E. long. Charles Wilford made a small collection of dried plants in the island in 1859, and they are included in the "*Index Floræ Sinensis*" cited above. The British establishment has recently been withdrawn from the island.

11. AUSTRALIA, TASMANIA, NEW ZEALAND, NEW GUINEA, AND NORFOLK ISLAND, WITH THE SMALLER NEIGHBOURING ISLANDS.

AUSTRALIA.—Excluding Tasmania, Australia stretches through about twenty-nine degrees of latitude, from 10° S. lat., and from about 115° to 154° E. long., with an area of 2,989,000 square miles, being rather more than two-thirds the size of Europe. There are few large rivers, and an immense tract of the interior is almost absolute desert, while the mountains, the highest of which are in the east and south-east, nowhere rise above 6,500 feet.

Mueller, F. *Fragmenta Phytographiæ Australiæ*. Melbourne, 1858-1881. Eleven vols. 8vo, some of them illustrated.

Bentham, G., and Mueller, F. *Flora Australiensis*. London, 1863-78. Seven vols. 8vo.

Mueller, F. *Introduction to Botanic Teachings at the Schools of Victoria*. Melbourne, 1877.

Mueller, F. *Eucalyptographia*. A descriptive Atlas of the Eucalypts [Gum-trees] of Australia and the adjacent Islands. Melbourne, 1879-84. 4to. 100 plates, with descriptive letterpress.

Bailey, F. M. *The Fern World of Australia*. Brisbane, 1881. 8vo. pp. 105.

Fitzgerald, R. D. *Australian Orchids*. Sydney, 1882-1888. Folio, two vols., the second not yet completed. Elaborate illustrations.

Mueller, F. *Iconography of Australian species of Acacia and cognate genera*. Melbourne, 1887-8. 4to, 130 plates.

Mueller, F. *Illustrations of Myoporineous Plants*. Melbourne, 1886. 4to. 74 plates.

Mueller, F. Systematic Census of Australian Plants. Melbourne, 1882-9. 4to. pp. 152, with four supplements.

Maiden, J. H. The useful Native Plants of Australia and Tasmania, 1889. 8vo. pp. 696.

The recorded Flowering Plants and Ferns of the whole of Australia number about 8,900 species, of which upwards of 7,600 are peculiar to the country. They belong to 1,394 genera and 149 natural orders. Small, hard leaves and brilliantly coloured flowers abound. Specially characteristic of this Flora are the capsular Myrtaceæ (including the Gum-trees—*Eucalyptus*), Leguminosæ (including the phyllodineous Acacias), Proteaceæ, Pittosporæ, Myoporinæ, and Grass trees—*Xanthorrhæa*.

NEW SOUTH WALES.—On the eastern side of Australia, extending from about 29° to 37° S. lat., and westward to the 141st meridian of E. long., the area being estimated at 310,700 square miles. The Murray river on the south forms the boundary of Victoria. Mount Sea View, at the junction of the Liverpool and New England ranges of hills, reaches a height of 6,000 feet.

Moore, C. Woods of New South Wales. Sydney, 1871. 8vo.

Woolls, W. Plants indigenous in the neighbourhood of Sydney. Sydney, 1880. 8vo. pp. 59.

LORD HOWE'S ISLAND.—About 300 miles east of Port Macquarie, N. S. Wales, in 159° E. long. and 32° S. lat. It is seven miles in length, with an average breadth of one mile, and the mountains rise to a height of nearly 3,000 feet. Of volcanic origin, with an exceedingly fertile soil, and everywhere covered with a dense vegetation.

Moore, C. Sketch of the Vegetation of Lord Howe's Island: A report to the Governor of New South Wales, fol., pp. 4, 1869.

The flora of this island is bracketed with N. S. Wales in Bentham's "Flora Australiensis." It is similar in character to that of Norfolk Island, though the genus *Araucaria* and the order Coniferæ are wholly wanting. Palms are conspicuous, consisting of three endemic species, namely, *Kentia Belmoreana*, *Kentia Canterburyana*, and *Clinostigma Mooreanum*. The commonest trees are *Hibiscus Patersonii*, *Myoporum acuminatum*, and *Ochrosia elliptica*. Capsular Myrtaceæ are represented by one species each of *Melaleuca* and *Leptospermum*, and Epacridæ by one *Dracophyllum*. Proteaceæ are wholly wanting, and Leguminosæ nearly so; among the few of this order is one species of the otherwise New Zealand genus *Carmichaelia*.

BALLS PYRAMID is a small island between Norfolk Island and Lord Howe's Island.

QUEENSLAND.—This Colony occupies the whole of north-eastern Australia, from Cape York to Point Danger, the northern boundary of New South Wales, and it extends westward to 138° E. long. The total area is estimated at 668,497 square miles; and it is about 1,300 miles from north to south and 900 miles in its greatest breadth.

Bailey, F. M. Handbook of the Ferns of Queensland. Brisbane, 1874. Small 8vo. pp. 72, and 22 pages of figures.

Bailey, F. M. Illustrated Monograph of the Grasses of Queensland. Brisbane, 1878. 1 vol. folio.

Bailey, F. M., and Tenison-Woods, J. E. A Census of the Flora of Brisbane: Proceedings of the Linnæan Society of New South Wales, iv. (1880), pp. 117-204. Orders, 123; genera, 633; species, 1,228.

Bailey, F. M. A Synopsis of the Queensland Flora, containing both Phœnogamous and Cryptogamous Plants. Brisbane, 1883. 8vo. Supplement 1, 1886; 2, 1888.

Bailey, F. M. The Flora of Queensland: a Sketch. London, 1886 (Colonial and Indian Exhibition). 8vo. pp. 14.

SOUTH AUSTRALIA.—This Colony stretches all across the continent of Australia, between 129° to 138° E. long. in the northern part, and 129° to 141° in the southern part of its area, the whole of which is computed at 900,000 square miles; and it is nearly 1,900 miles from north to south. But most of the works relating to the botany, &c. (including Bentham's "Flora Australiensis") deal only with the original area from the 26th parallel of S. lat. southward.

Schomburgk, R. The Flora of South Australia. (From the Handbook of South Australia.) Adelaide, 1875. 8vo. pp. 64.

Tepper, O. On the Characteristics and Distribution of the Native and Naturalized Plants about Ardrossan, Yorke's Peninsula. Adelaide, 1880. 8vo.

Tate, Ralph. A Census of the Indigenous Flowering Plants and Ferns of extratropical South Australia: Transactions of the Philosophical Society of Adelaide, 1880. Reprint, 8vo. pp. 45.

Brown, J. E. Forest Flora of South Australia. Adelaide, 1882-9. Large folio, coloured illustrations, not yet completed.

KANGAROO ISLAND.—Situated at the entrance to St. Vincent Gulf, South Australia. About 90 miles in length, running east and west, and 25 miles in its greatest breadth, with an area of 1,500 square miles. The surface is undulating, but the elevation nowhere exceeds 1,000 feet.

Tate, R. The Botany of Kangaroo Island: Transactions of the Royal Society of South Australia, 1883. Reprint, small 8vo. pp. 56, with map.

Tate enumerates 414 species of vascular plants belonging to 230 genera and 69 natural orders. The number of peculiar species is small, and many West Australian and Tasmanian plants here find their eastern and western limits respectively.

VICTORIA.—The smallest of the Australian Colonies, yet nearly equalling Great Britain in area. Its greatest length is about 490 miles, and its greatest breadth 300 miles, and it abuts on New South Wales to the north and South Australia to the west. The "Alps" are the highest mountains in Australia, reaching very nearly 6,500 feet.

Mueller, F. The Plants Indigenous to the Colony of Victoria. Lithograms. Melbourne, 1864-65. 4to. 71 and 18 supplemental plates. The descriptive letterpress of this work has only been published as far as the end of the Thalamifloræ.

The tallest Gum-trees, and the tallest trees in the world, are found in some of the gullies of Victoria. Several trees have been measured that were more than 400 feet high, and the highest was 471 feet.

WESTERN AUSTRALIA.—This includes the whole of the continent westward of the 129th meridian of E. long., and has an area of 1,060,000 square miles, though only a comparatively small portion of it is settled, and immense tracts have not been explored. In Bentham's "Flora Australiensis" all the country north of the tropic of Capricorn is reckoned to his "North Australia," which in like manner includes the tropical part of the Colony of South Australia.

Drummond, J. Vegetation of West Australia. Hooker's Journal of Botany, ii. (1840), pp. 343-372; iv. (1842), pp. 79-86. Hooker's London Journal of Botany, i. (1842), pp. 86-97, 215-217, 397-398, 626-635; ii. (1843), pp. 167-183; iii. (1844), pp. 263-266, 300-314. Hooker's Kew Journal of Botany, i. (1849), pp. 247-251, 374-377; ii. (1850), pp. 30-32; iv. (1852), pp. 181-189; v. (1853), pp. 115-122, 139-145, 177-183, 312-315, 344-347, 398-406.

Mueller, F. A Catalogue of Plants collected during Mr. Alexander Forest's Geographical Exploration of North-west Australia.

Mueller, F. Forest Resources of Western Australia. London, 1879. 4to. pp. 30, tt. 20.

Mueller, F. The Plants indigenous around Sharks Bay and its vicinity. Perth, 1883. Folio. pp. 24.

The Flora of Western Australia is one of the most highly specialized in the world, if not the most highly specialized, for out of 3,136 species of Flowering Plants and Ferns recorded in 1886, 2,680 are endemic. Many of the species are extremely rare and local, and will doubtless disappear altogether as cultivation extends.

TASMANIA. Situated to the South of Australia (from which it is divided by Bass's Straits, 120 miles wide), between about $39^{\circ} 40'$ and $43^{\circ} 40'$ S. lat., and $143^{\circ} 45'$ to $148^{\circ} 20'$ W. long., with an estimated area of 26,172 square miles. This includes the adjacent islands, fifty-five in number, which are mostly in Bass's Straits. The largest are King, Flinders, and Cape Barren Islands. Tasmania, or Van Diemen's Land, itself is undulated and well watered, many of the mountain peaks reaching an altitude of between 4,000 and 5,000 feet, and two or three slightly exceed 5,000 feet.

Tasmania is included in Bentham's "Flora Australiensis."

Hooker, J. D. Flora Tasmaniae. London, 1855-60. Two vols. quarto, with 200 coloured plates.

Whiting, G. Products and Resources of Tasmania—Vegetable Products, by W. Archer. Hobart, 1862. 8vo.

Mueller, F. Contributions to the Phytography of Tasmania: Proceedings of the Royal Society of Tasmania, in several volumes.

Spicer, W. W. Handbook of the Plants of Tasmania. Hobart, 1878. 8vo.

Mueller, F. Census of the Plants of Tasmania: Proceedings of the Royal Society of Tasmania, 1879, Appendix, pp. 32.

Mueller, F. Vegetation of King Island: Proceedings of the Royal Society of Tasmania, 1881, pp. 46-48.

Mueller, F. Enumeration of the plants of Deal Island, Kent's group: Proceedings of the Royal Society of Tasmania, 1884, pp. 282-3.

The Flora of Tasmania is quite Australian in character, including the characteristic gum-trees. Mueller records 945 species of Flowering Plants, belonging to 363 genera and 88 natural orders. In the very different Flora of New Zealand the numbers are nearly the same, except of genera, of which there are only 306.

NEW ZEALAND.—Extends through about thirteen degrees of latitude, from 34° to $47^{\circ} 15'$ S., and from $166^{\circ} 30'$ to $178^{\circ} 30'$ E. long., and the total area is about 10,400 square miles. The mountains in the southern island, especially on the western side, reach great altitudes, Mount Cook exceeding 12,000 feet.

Hooker, J. D. *Flora Novæ Zealandiæ*. London, 1852–1855. 2 vols. 4to, with 130 plates.

Hooker, J. D. *Handbook of the New Zealand Flora*. London, 1864. 8vo. pp. 798.

H. E. S. L. *Ferns which grow in New Zealand and the Adjacent Islands, plainly described*. Auckland, N.Z., 1875.

Buchanan, J. *The Indigenous Grasses of New Zealand*. Wellington, 1880. Folio, sixty-four plates with descriptive letterpress.

Buchanan, J. *Manual of the Indigenous Grasses of New Zealand*. Wellington, 1880. An octavo edition of the preceding.

Petrie, D. *A visit to Stewart Island, with Notes on its Flora*. Transactions of the New Zealand Institute, xiii., 1880, pp. 323–332.

Kirk, T. *On the Flowering Plants of Stewart Island*: Transactions of the New Zealand Institute, xvii., 1884, pp. 213–228.

Kirk, T. *On the Ferns of Stewart Island*. Loc. cit. pp. 228–334.

Kirk, T. *The Forest Flora of New Zealand*. Wellington, 1889. Folio. pp. 345, tt. 142.

Since the publication of the “*Handbook of the New Zealand Flora*” a number of distinct new species have been discovered and described, chiefly in the “*Transactions and Proceedings of the New Zealand Institute*.” Many very slight variations from the established species have also been described as species.

The native vegetation is abundant and often luxuriant, yet it is composed of a comparatively small number of species; less than a thousand species of flowering plants being recorded. In contrast to this it may be mentioned that the Flora of Japan (a country occupying a situation in the northern hemisphere similar to that of New Zealand in the southern) comprises considerably more genera than there are species in New Zealand, and about three times as many species.

The forests of New Zealand consist to a great extent of various kinds of Beech (*Fagus*) and Pine (*Podocarpus*, *Dacrydium*, &c.); and the herbaceous vegetation contains a large number of endemic species of such common European genera as *Ranunculus*, *Epilobium*, and *Veronica*. *Fuchsia* and *Calceolaria*, otherwise restricted to America, are represented by two or three species each. The Leguminosæ are very few and peculiar. Various Coniferæ, a laurel, one or two Proteaceæ, and *Atherosperma novæzealandiæ* are among the best timber trees. Many English weeds have become very common.

Ferns are very numerous and varied, and include eight or ten arboreal species.

KERMADEC ISLANDS.—A chain of widely separated islands, between 500 and 600 miles to the north-east of New Zealand, situated between 29° and 32° S. lat., and 178° to 180° W. long. The principal islands are Raoul, or Sunday, and Macaulay; Curtis and Esperance being little more than rocks. Sunday Island has an estimated area of 7,260 acres, rises to a height of 1,720 feet, and is clothed with forest from the sea coast to the top of the mountains.

Hooker, J. D. *On the Botany of Raoul Island*: Journal of the Linnæan Society, i. (1857), pp. 125–129.

Cheeseman, T. F. *On the Flora of the Kermadec Islands*: Transactions of the New Zealand Institute, xx., 1887, pp. 151–181.

Hemsley, W. B. *The substance of the foregoing with a commentary thereon*. “*Nature*,” xxxviii., p. 622.

The vegetation of the Kermadec Islands consists almost entirely of plants common to New Zealand, though the commonest tree, *Metrosideros polymorpha*, which is all over Polynesia, and a palm, which is the same as that inhabiting Norfolk Island, are not natives of New Zealand. Cheeseman enumerates 115 vascular plants.

CHATHAM ISLANDS.—Situated about 560 miles east of New Zealand, between 43° and 45° S. lat., and 176° to 177° W. long. Chatham Island has an area of 305,280 acres, of which 57,800 are lakes and lagoons. Pitt Island is 12 miles long by eight broad. The vegetation is very similar to that of New Zealand, and a few of the same plants also occur in Norfolk Island.

Hooker, J. D. Handbook of the New Zealand Flora. London, 1864. 8vo. pp. 798.

Mueller, F. The Vegetation of the Chatham Islands. Melbourne, 1864. 8vo. 86, with seven plates.

Buchanan, J. On the Flowering Plants and the Ferns of the Chatham Islands: Transactions and Proceedings of the New Zealand Institute, vii., 1875, pp. 333–341.

The later enumeration contains 205 species of Flowering Plants and Ferns, belonging to 129 genera. Out of this number, 191 are common to New Zealand, leaving only 13 peculiar to these islands. Remarkable among the endemic plants are *Olearia Traversii* and *Senecio Huntii*, arboreous members of the Compositæ, from 20 to 30 feet high, with a trunk sometimes as much as two feet in diameter. *Myosotidium nobile*, a giant kind of Forget-me-not, is also noteworthy as an ornamental plant. There are no Myrtaceæ, and the Leguminosæ are only represented by *Sophora tetraptera*. The New Zealand palm, *Rhopalostylis sapida*, syn. *Areca sapida*, and the New Zealand Flax, *Phormium tenax*, extend to the Chatham Islands.

ANTIPODES ISLAND.—A very small island in 179° E. long. and in about 49° 30' S. lat. Nothing is known of its vegetation.

BOUNTY ISLAND.—In about the same longitude as the last, and in 47° 30' S. lat., and equally unknown botanically.

AUCKLAND ISLANDS.—This group lies in about 50° S. lat. and 166° E. long., and is about four miles long by two and a half broad. The herbaceous and shrubby vegetation is almost identical with that of Campbell Island, in addition to which there is an arboreous belt on the sea shore. Since the publication of Sir Joseph Hooker's work, cited under Campbell Island, a somewhat augmented list has appeared.

Kurtz, F. Ueber eine auf den Aucklandinseln gemachte Pflanzen-Sammlung: Sitzungsberichte des botanischen Vereins der Provinz Brandenburg, 1876, pp. 3–12.

The trees consist almost entirely of a Myrtacea (*Metrosideros lucida*), 20 to 40 feet high, with trunks two to three feet in diameter. Associated with this are species of *Coprosma*, *Panax* and *Veronica* and the tree-like Epacridea, *Dracophyllum longifolium*.

CAMPBELL ISLAND.—Situated in 52° 30' S. lat. and 169° E. long., and 30 miles in circumference, with elevations up to 1,500 feet. There are no trees, and the vegetation is almost entirely herbaceous and remarkable for the showy character of many of the plants. The flora is fully elaborated, and many of the plants figured, in Hooker's "Flora Antarctica," and it is also included in the same author's "Handbook of the Flora of New Zealand."

Hooker, J. D. *Flora Antarctica*, part I. London, 1844. 4to. pp. 208, tt. 110.

Kirk, T. Notes on Plants from Campbell Island: Transactions of the New Zealand Institute, xiv. (1881), pp. 387–389.

Buchanan, J. Campbell Island and its Flora: Transactions of the New Zealand Institute, xvi. (1883), pp. 398–400.

Conspicuous among the plants giving colour to the vegetable carpet are brilliant purple flowered species of *Celmisia* and *Pleurophyllum*, which Buchanan observes may be regarded as the gems of the southern Flora. *Chrysobactron Rossii*, a liliaceous plant with bright yellow flowers, is also very showy.

MACQUARIE ISLAND.—This is the most southerly of the islands in the New Zealand region, lying about 600 miles to the south-west of the mainland, in $54^{\circ} 30'$ S. lat. and 159° E. long. The surface is hilly, though the greatest elevation is probably not more than 600 to 700 feet, and the vegetation is very sparse, consisting entirely of herbaceous plants.

Scott, J. H. Macquarie Island: Transactions of the New Zealand Institute, xv. (1882), pp. 484–493.

Hemsley, W. B. Botany of the “Challenger” Expedition, Introduction, 1885, pp. 62–65. The substance of the foregoing, with fuller particulars of the general distribution of the plants.

Altogether 18 flowering plants and ferns are known to inhabit this island, whereof 12 also occur in New Zealand, while of the remaining six, three inhabit the Auckland and Campbell Islands, and the others extend westward to the Crozets, Kerguelen, and Fuegia.

NEW GUINEA.—Excepting Australia, this is the largest island in the world, extending from $130^{\circ} 50'$ to $150^{\circ} 35'$ E. long., and from near the equator to $10^{\circ} 40'$ S. lat., the estimated area being 325,000 square miles. Its greatest length is 1,490 miles, and its greatest breadth 430 miles. Very little is known of the interior, but there are very lofty mountains, rising in some parts to a height of 17,000 or 18,000 feet. The south-eastern portion, from the 141st parallel of longitude eastward, an area of 88,000 square miles, is British. Judging from the samples of the vegetation that have come under the observation of botanists, and from the descriptions of travellers, the flora is an exceedingly rich one, abounding in peculiar types, more Asiatic than Australian in character, though there is a considerable intermingling of the Australian element.

D'Albertis, L. M. *New Guinea: What I did and what I saw.* London, 1880. 2 vols. 8vo, with illustrations and a map.

Mueller, F. *Descriptive Notes on Papuan Plants.* Melbourne, 1875–1885. Small 8vo. Eight parts, vol. i., pp. 117; vol. ii., pp. 52.

Beccari, O. *Malesia: Raccolta di Osservazioni Botaniche intorno alle Piante dell' Arcipelago Indo-Malese e Papuano.* Genoa, 1877–1887. 4to. 3 vols., illustrated.

The Louisiade Archipelago, and the Trobirand, Woodlark, and D'Entrecasteaux groups of islands, to the east of New Guinea, have been declared under British protection. Next to nothing is known of the vegetable productions of these islands.

NORFOLK ISLAND.—About seven miles long and four broad, with a maximum elevation of 1,200 feet; situated in about 29° S. lat. and 168° E. long. Philip Island, which is very much smaller in extent, is on the same meridian, and about five miles south. There is one peak here upwards of 900 feet high.

Endlicher, S. *Prodromus Floræ Norfolkicæ*. Vienna, 1833. Small 8vo. pp. 100.

Cunningham, A. Notes on the vegetation of Norfolk and Philip Islands, with a list of species not included by Endlicher: Hooker's London Journal of Botany, i. (1842), pp. 111-124.

Backhouse, J. Notes on the Vegetation of Norfolk Island: Narrative of a visit to the Australian Colonies, 1843, pp. 251-273.

A small but interesting Flora, having a closer affinity to the New Zealand than the Australian. Myrtaceæ and Proteaceæ are apparently unrepresented. *Aruncaria excelsa*, the Norfolk Island Pine, is the most conspicuous feature in the vegetation, towering high above all other trees. Allied species occur in New Caledonia and New South Wales.

CATO, Tregosse, Coringa, Madeleine Cays, and Willis group are islets off the east coast of Australia, concerning which nothing is known botanically.

12. POLYNESIA.

FIJI ISLANDS.—An Archipelago of some 255 islands, lying between 15° and 22° S. lat., and 175° E. and 177° W. long., and having an area of about 7,403 square miles. In the larger island the mountain peaks rise to a height of 4,000 feet.

The principal islands are:—

Viti Levu	-	4,112 sq. miles.	Bega	-	13 sq. miles.
Vanua Levu	-	2,432 $\frac{1}{2}$ "	Yedua	-	13 $\frac{1}{2}$ "
Taviuni	-	217 $\frac{3}{4}$ "	Lakemba	-	12 "
Kadavu	-	124 $\frac{1}{2}$ "	Matuka	-	11 "
Windward	-	59 "	Totorja	-	11 "
Koro	-	57 $\frac{3}{4}$ "	Maugo	-	10 "
Angau	-	46 "	Chichia	-	10 "
Ovalau	-	42 $\frac{1}{2}$ "	Laucala	-	9 "
Rabi	-	28 "	Vea	-	9 "
Moala	-	28 "	Naitaba	-	9 "
Quamea	-	26 "	Kanacia	-	8 "
Loma-Loma	-	24 "	Mokani	-	4 $\frac{3}{4}$ "
Vatu Lele	-	18 $\frac{1}{2}$ "	Batiki	-	4 "
Ono	-	13 "			

On account of the system of cultivation followed by the natives of constantly selecting new spots as the old become exhausted, and other evidence, Seemann was of opinion that there was very little genuine virgin forest even at the date of his visit. Nevertheless, the islands support a luxuriant vegetation, rich in endemic species, but with few endemic genera. In general character the flora is Malayan, with a slight intermixture of Australian types.

Seemann, B. *Flora Vitiensis*. London, 1865-1873. 4to. pp. 453, with one hundred coloured plates.

Seemann, B. *Viti: An account of a Government Mission to the Vitian or Fijian Islands in the years 1860-1861*. Cambridge, 1862. 8vo. pp. 447, with illustrations and a map.

Baker, J. G. *Ferns of the Fiji Islands: Journal of Botany*, 1879, pp. 292-300.

Horne, J. A Year in Fiji, or an Inquiry into the Botanical, Agricultural, and Economical Resources of the Colony. London, 1881. 8vo. pp. 297, with a map.

Baker, J. G. Recent Additions to our Knowledge of the Flora of Fiji: Journal of the Linnean Society, xx. (1883), pp. 358–373.

FANNING ISLAND.—A small coral island, in about 159° W. long. and 4° N. lat. Vegetation restricted to the universal Polynesian sea-shore plants.

Hemsley, W. B. List of Plants collected in the Pacific Islands, by J. T. Arundel: Botany of the “Challenger” Expedition, i., part 3 (1885), p. 116.

There are fifteen flowering plants in the collection in question in the Kew Herbarium.

MALDON ISLAND.—A small coral island, in 155° W. long. and 4° S. lat., with a scanty vegetation, consisting of some of the same species inhabiting Fanning and Pitcairn.

Hemsley, W. B. Plants collected in Maldon Island, by James Macrae: Botany of the “Challenger” Expedition, i. (1885), Introduction, p. 17.

STARBUCK.—A small island to the south of Maldon, in about 156° W. long. and 5° S. lat.

The common Polynesian *Lepidium piscidium* and *Sida fallax* are the only plants at Kew from this island.

CAROLINE ISLAND.—A small coral island in mid Pacific, in 150° W. long. and 10° S. lat. It was the station of one of the United States expeditions for the observation of the transit of Venus.

Trelease. Plants collected in Caroline Island, by Dr. Dixon: Memoirs of the National [American] Academy of Sciences, ii., 1884, p. 88.

Hemsley, W. B. List of Plants collected in Caroline Island: Botany of the “Challenger” Expedition, i. (1885), Introduction, p. 18. Reproduced from the foregoing.

About twenty species of flowering plants, of all them widely spread in Polynesia, and some having a much wider range.

PITCAIRN ISLAND.—The refuge of the mutineers of the “Bounty,” and the home of their descendants, is under the supervision of the Governor of New South Wales. It is situated in about 130° W. long. and 25° S. lat. There is no complete account of the vegetation in existence.

Hemsley, W. B. A list of Plants in the Kew Herbarium from Pitcairn Island: Botany of the “Challenger” Expedition, i. (1885), Introduction, p. 18.

About a dozen species are known, including the widely-spread *Hibiscus tiliaceus*, *Osteoncles anthyllidifolia*, *Metrosideros polymorpha*, *Morinda citrifolia*, *Guetarda speciosa*, and *Cerbera Odollam*.

It is announced that the British Government has annexed the Suvarrow Islands in 13° 21' S. lat. and 163° 20' W. long.; Rotumah Islands, north of the Fijis, in about 12° 50' S. lat. and 177° E. long.; Penrhyn Island, in 9° 50' S. lat. and 158° 30' W. long.; and Christmas Island, in 2° N. lat. and 158° W. long. Palmerston

Island, in 18° S. lat. and 163° W. long., is reported to be inhabited by a small English-speaking community.

A protectorate has also been proclaimed over the Cook Islands, which are situated between the Navigator's Islands to the west, and the Society Islands to the east. Rarotonga is the largest, and rises to a height of 2,000 feet. The following plants in the Kew Herbarium were collected in Rarotonga by the Rev. W. Wyatt Gill :—*Elæocarpus* sp., *Alphitonia excelsa*, *Inocarpus edulis*, *Melastoma denticulatum*, *Mussaenda frondosa*, *Vitex trifolia*, *Ficus tinctoria*, and *Centotheca lappacea*. The same gentleman also collected a few plants in the neighbouring island of Mangaia, including the widely spread *Osteomeles anthyllidifolia*.

Many other islands in the Pacific Ocean, mostly uninhabited, are English possessions, and some of them have been leased out for guano collection. Among these are Pilgrim, Ducie, Roggewein, Dudosa, Vostoc, Bauman, and Flint.

Hemsley, W. B. List of Plants collected by J. F. Arundel, Esq., in various small guano islands in the Pacific. Botany of the "Challenger" Expedition, i. 3, p. 116. See also Introduction to the same work, pp. 13-19.

13. THE DOMINION OF CANADA AND NEWFOUNDLAND.

THE DOMINION OF CANADA extends from the Atlantic to the Pacific, through nearly 86 degrees of longitude, from 55° to 141° W., and from 42° N. lat., in the lake region, northward; the area being estimated at 3,470,392 square miles, exclusive of the great lakes and rivers. It is now divided into seven provinces, namely: Nova Scotia, Prince Edward Island, New Brunswick, Old Canada (Ontario and Quebec), Manitoba, British Columbia (which includes Queen Charlotte and Vancouver Islands), and the North-west Territories — Assiniboia, Saskatchewan, Alberta, and Athabasca.

There is no complete descriptive work on the vegetation of British North America; but Professor Macoun's "Catalogue," which is approaching completion, gives particulars of the distribution of the plants throughout the Dominion and Newfoundland, and descriptions of nearly all of them will be found in the works cited below.

ANTICOSTI is an island in the Gulf of St. Lawrence, 125 miles long, and 30 miles across in its broadest part, with an estimated area of 2,500 square miles. Well wooded and mountainous.

BRITISH COLUMBIA comprises the territory between the Rocky Mountains and the Pacific coast, the average breadth being about 250 miles, and the length of the coast line 450 miles. It is the most mountainous part of the Dominion, culminating in Mount Hooker, in the Rocky Mountains, which is about 16,600 feet high.

NEW BRUNSWICK is situated between 45° 5' and 48° 5' N. lat., and is connected with Nova Scotia by a low isthmus. Area about 27,105 square miles.

NEWFOUNDLAND is an island situated between $46^{\circ} 37'$ and $51^{\circ} 39'$ N. lat., and $52^{\circ} 35'$ and $59^{\circ} 25'$ W. long., with an estimated area of 40,200 square miles.

NOVA SCOTIA is a peninsula at the eastern extremity of the Dominion, is about 300 miles long and 100 miles in its greatest breadth, with an area of 20,907 square miles, one-fifth of which consists of lakes, rivers, and inlets of the sea. Cape Breton Island forms a part of this province.

PRINCE EDWARD ISLAND lies in a bay formed by Nova Scotia and New Brunswick, and is about 140 miles long by 34 miles in its greatest breadth, with an area of 2,156 square miles.

VANCOUVER ISLAND lies on the Pacific side of the continent, between $48^{\circ} 20'$ and $50^{\circ} 55'$ N. lat., and $123^{\circ} 10'$ to $128^{\circ} 20'$ W. long., and has an area of 75,634 square miles.

Meyer, E. De Plantis Labradoricis, libri tres. Leipsic, 1830. 12mo. pp. 218.

Hooker, W. J. Flora Boreali-Americana; or the Botany of the northern parts of British America. London, 1833-1840. 2 vols. 4to, with 238 plates.

Torrey, J., and Gray, A. A Flora of North America. New York, 1838-1843. Ranunculaceæ to the end of Compositæ.

Provancher, L. Flore Canadienne, ou Description de toutes les Plantes des Forêts, Champs, Jardins et Eaux du Canada. Quebec, 1862. 8vo. pp. xxix et 842.

Lawson, G. Synopsis of Canadian Ferns. Montreal, 1864. 8vo.

Lyall, David. Account of Botanical Collections made on the North American Boundary Commission: Journal of the Linnean Society, vii., 1864, pp. 124-144.

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Emerson, G. B. A Report on the Trees and Shrubs growing naturally in the Forests of Massachusetts. Boston, 1875. Two vols. 8vo, illustrated.

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Macoun, J. Report on the Botany of the country from Vancouver Island to Carleton on the Saskatchewan: Geological Survey of Canada, 1875-76, pp. 110-232. A tabular view of the distribution of Canadian plants is given, pp. 230-232.

How, H. Additions to the List of Nova Scotian Plants: Transactions of the Nova Scotian Institute of Natural Science, iv. (1876-77), pp. 312-421.

Macoun, J. Synopsis of the Flora of the Valley of the St. Lawrence. Montreal, 1877. 8vo.

Fowler, Rev. J. Catalogue of New Brunswick Plants, 1878-79.

Eaton, D. C. Ferns of the United States and the British North American Possessions. Salem, 1878-80. Two vols. 4to, 81 coloured plates and descriptive text.

Bell, Robert. Canadian Forests: Geological Survey of Canada, 1879-80.

Macoun, J. Catalogue of Canadian Plants. Montreal. Vol. i., 1883-1886, Dicotyledons. 8vo. pp. 623. Mainly geographical.

Macoun, J. List of Plants collected by Dr. Robert Bell in Newfoundland: Geological and Natural History Survey of Canada, n. s. i., 1885, pp. 21-25 DD. 102 vascular plants.

Small, H. B. Canadian Forests. Montreal, 1885. 8vo. pp. 64.

Sargent, C. S. Report on the Forests of North America, exclusive of Mexico: Department of the Interior Census Office [U.S.A.], tenth census, 1880. Washington, 1884. 4to. pp. 612, with numerous maps, besides a separate volume containing sixteen large folio maps illustrating the distribution of the trees in British territory as well as in the United States.

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Gray, A. Synoptical Flora of North America. New York, 1884-1886. The Gamopetalæ.

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Lugrin, C. H. New Brunswick: its Resources, &c., 1886, Forests, pp. 145-159.

14. THE BRITISH WEST INDIAN ISLANDS, BERMUDAS, BRITISH GUIANA, AND BRITISH HONDURAS.

Purdie, W. *Journal of a Botanical Mission to the West Indies*: Hooker's *London Journal of Botany*, iii., 1844, pp. 501-533; iv., 1845, pp. 14-27. Also reprint.

Grisebach, A. H. R. *Flora of the British West Indian Islands*. London, 1859-61. 8vo. pp. 789.

Grisebach, A. H. R. *Die Geographische Verbreitung der Pflanzen Westindiens*, 1865: *Goettingen Abhandlungen*, xii., 1866; *Gesammelte Abhandlungen und kleinere Schriften zur Pflanzengeographie*, pp. 222-285.

Daniell, W. F. *On the Cascarilla Plants of the West India and Bahama Islands*: *Pharmaceutical Journal*, iv., 1863, pp. 144-150, 226-231. Also reprint.

Fée, A. L. A. *Histoire des Fougères et des Lycopodiacees des Antilles*. Paris, 1866. 4to. pp. 164, tt. 34.

Johow, Fr. *Die chlorophyllfreien Humusbewohner Westindiens*: *Pringsheim's Jahrbücher*, xvi. (1885), pp. 415-449, tt. 16-18.

Hemsley, W. B. *Botanical Bibliography of the Lesser Antilles Tobago to Porto Rico, inclusive*. Appendix to the Report of the British Association Committee, consisting of Mr. W. T. Thiselton Dyer (Secretary), Prof. Newton, Prof. Flower, Mr. Carruthers, and Mr. Slater, appointed for the purpose of taking steps to investigate the Fauna and Flora of the West Indies, 1888.

ANGUILLA.—About 60 miles north-west of St. Christopher, the Dutch island of St. Eustatius, the French island of St. Bartholomew, and the French and Dutch St. Martin lying between. It has an area of 35 square miles, and very little elevation. The adjacent Dog and Sombrero Islands belong to Anguilla. Owing to great droughts and the absence of freshwater springs, this island is not very fertile, yet a considerable amount of garden produce is raised and finds a ready market in St. Thomas.

ANTIGUA.—In $17^{\circ} 5' N.$ lat. and $61^{\circ} 50' W.$ long., and about 70 miles in circumference. The mountains reach a height of 2,200 feet, but the vegetation is not so luxuriant as in most of the neighbouring islands, on account of the comparatively small rainfall. Five Islands are on the western side.

Hooper, E. D. M. *Report upon Antigua in Relation to Forestry*. Colonial Office, 1888.

BAHAMAS, TURKS, and CAICOS ISLANDS.—Though separated politically, these islands form one chain, extending from 71° to $79^{\circ} W.$ long., and from about 21° to $27^{\circ} 30' N.$ lat. The principal islands of the Bahamas proper are: New Providence, Abaco, Harbour, Eleuthera, Inagua, Mayaguana, Andros, Great Bahama, Ragged Island, Rum Cay, Exuma, Long Island, Crooked and Acklin Islands, Long Cay, Cat Island, Watling's Island (once known as St. Salvador), the Berry Islands, and the Biminis. Besides these there is an immense number of islets and rocks, and the total area is estimated at 4,466 square miles.

The names of the principal Turks and Caicos Islands, forming the South-eastern part of the chain, are: West Caicos, Providenciales, N. Caicos, Grand Caicos, E. Caicos, S. Caicos, Grand Turk and Salt Cay.

The principal named islands of this chain are :—

Abaco.	Highborn Cay.
Andros.	Hog Island.
Atwood Cay.	Hogsty Reef.
Bacon Cay.	Inagua, Great.
Berry Island.	Inagua, Little.
Bimini.	Isaac.
Castle.	Jamaica Cay.
Cat Cay.	Jumentos Cays.
Cat.	Little Exuma.
Cay Verde.	Little San Salvador.
Chub Cay.	Long Island.
Columbus Cay.	Mayaguara.
Conception.	New Providence.
Crooked Island.	North Caicos.
Duck Cays.	Plana Cay.
Dunmore.	Providenciales.
East Caicos.	Ragged Island.
East Harbour.	Royal Island.
Egg Island.	Rum Cay.
Eleuthera.	Salt Cay.
Exuma Chain.	Samana.
Fish Cays.	San Salvador.
Flamingo Cay.	Scrub Cay.
Fortune Island.	Seal Cay.
Grand Caicos.	Turks Island.
Great Bahama.	Water Cay.
Great Exuma.	Watling.
Great Stirrup Cay.	Wax Cay.
Green Cay.	West Caicos.
Gun Cay.	White Cay.
Harbourd.	Yuma.

Eggers, H. F. A. *Flora of the Bahamas: Nature*, xxxvii. (1886), p. 565.

Baron Eggers's paper is merely a sketch of the prominent features in the vegetation. Mr. J. G. Baker has since examined and reported on Baron Eggers's botanical collections: see report of the committee appointed for the purpose of exploring the Flora of the Bahamas in the Report of the British Association for 1888.

BARBADOS.—This island lies in about $13^{\circ} 10'$ N. lat. and $59^{\circ} 30'$ W. long., and is the most easterly of the West Indian islands. It is nearly twenty-one miles long by fourteen in breadth, and has an area of 166 square miles. The greatest elevation is 1,150 feet, and the eastern side is very rugged.

Hughes, Griffith. *The Natural History of the Barbados*. In ten books. London, 1750. Folio. pp. 314, tt. 29. Botany, pp. 97–256.

Maycock, J. D. *Flora Barbadiensis*. London, 1830. 8vo, with a geological map.

Schomburgk, R. *History of Barbados*. London, 1848. 8vo. (Flora, pp. 573–633.)

BARBUDA.—A small uninhabited island, about half a degree north of Antigua, in about $17^{\circ} 40'$ N. lat.

CAICOS ISLANDS. See *Bahamas*.

DOMINICA.—This island lies between the French islands of Guadeloupe to the north-west and Martinique to the south-east, in $15^{\circ} 20'$ N. lat. and 61° W. long. It is twenty-nine miles long by sixteen broad, with an area of 292 square miles, and the mountains rise to an altitude of nearly 5,000 feet. The vegetation is luxuriant, and the forests contain valuable timber.

Johow, F. Vegetationsbilder aus West-Indien: eine Excursion nach dem kochenden See auf Dominica: Kosmos, 1884, ii., pp. 112–130, 270–285. Abstract in Engler's Jahrbücher, vii. (1886), Literaturbericht, p. 76.

Nicholls, H. A. A. The Natural Resources of Dominica: Handbook of the West Indies and British Honduras, Colonial and Indian Exhibition, 1886, pp. 120–126.

Mr. Ramage has botanised Dominica and St. Lucia for a joint Committee appointed by the Royal Society and British Association, and his collections are being determined at Kew.

GRENADA.—Between $11^{\circ} 58'$ and $12^{\circ} 30'$ N. lat., and in about $61^{\circ} 40'$ W. long., and about twenty-one miles long by twelve miles in its greatest breadth, with an area of 125 square miles. The Grand Etang, a lake on the summit of the mountain ridge, at an elevation of 1,740 feet, is one of the most remarkable natural features.

Murray, G. A Half-holiday in Grenada: Gardener's Chronicle, series 3, iii., pp. 8.

GRENADINES.—A group of small islands lying between Grenada and St. Vincent, partly attached to the Government of Grenada and partly to that of St. Vincent. The largest are Bequia and Carriacou, and the other named ones are Ronde, The Sisters, Les Tantes, Savan, Hillsborough, Frigate, Union, Little Martinique, Bird, Mayero, Cannouan, Little Cannouan, Sail, Quatre, Moustique, and Baliceaux.

JAMAICA.—The most westerly and the largest of the British West Indian islands, lying west of Hayti or St. Domingo, and south of Cuba, between 76° and $78^{\circ} 31'$ W. long., and $17^{\circ} 40'$ and $18^{\circ} 30'$ N. lat. It is 144 miles long and 50 in extreme breadth, with an area of 4,193 square miles, and the mountains range from 5,000 to 6,000 feet high, with here and there loftier peaks up to 7,500 feet.

The Cayman Islands are a dependency of Jamaica. They lie to the north-west, between $19^{\circ} 10'$ and $19^{\circ} 45'$ N. lat., and $79^{\circ} 30'$ and $80^{\circ} 35'$ W. long. Grand Cayman, the largest of these islands, contains about 2,000 inhabitants. Little Cayman and Cayman Brac are also inhabited.

Pedro and Morant Cays to the south of Jamaica, in about 17° N. lat., are merely guano islands. Altogether these dependencies have an area of about 90 square miles.

Sloane, Hans. A Voyage to the islands Madera, Barbados, Nieves, St. Christopher, and Jamaica, with the Natural History of the last of those islands. London, 1707–25. Two vols. folio, with 274 plates.

Browne, P. The Civil and Natural History of Jamaica. London, 1756. Folio. pp. 503, tt. 50. Botany, pp. 71–374, tt. 1–38.

Jenman, G. S. Hand list of Jamaica Ferns. Demerara, 1881. Small 8vo. pp. 65.

The Flora of Jamaica has been almost fully investigated. The Cayman Islands have recently been botanically explored by Mr. W. Fawcett, F.L.S., Director of the Botanical Department, Jamaica, though the

results have not yet been published. His collection of dried plants, determined at Kew, consists of about 100 species, and they are almost without exception quite common species.

LEEWARD ISLANDS.—The most northerly group of the Lesser Antilles, of which the following are British: Sombbrero, Antigua, Montserrat, St. Kitts, Nevis, Dominica, and the Virgin Islands.

MONTSERRAT.—Situated in $16^{\circ} 45'$ N. lat. and $62^{\circ} 10'$ W. long., and having an area of 35 square miles. It is very mountainous, the highest peak slightly exceeding 3,000 feet, and several of them reaching 2,500 feet. These mountains are said to be covered to their summits with virgin forest.

NEVIS.—This island lies to the south-east of St. Christopher, from which it is about two miles distant. Its area is about 50 square miles, and its greatest elevation 3,200 feet.

Sloane visited this island, but he made no collections there.

ST. CHRISTOPHER or ST. KITTS.—This island lies to the north-west of Antigua, in $17^{\circ} 20'$ N. lat. and $62^{\circ} 45'$ W. long., and has an area of sixty-eight square miles. Mount Misery, the highest peak, has an altitude of 4,060 feet. "The higher slopes of the mountains are clothed with grass, while their summits are crowned with noyean or iron wood, Spanish ash, red sweetwood, wild mahoe, snakewood, white box, dogwood, and other forest trees." Handbook of the West Indies and British Honduras, Colonial and Indian Exhibition, 1886.

Robinson, H. G. R. Vegetation of St. Kitts: Hookers' Kew Journal of Botany, ix., 1857, pp. 115–119.

ST. VINCENT.—Situated in about $13^{\circ} 10'$ N. lat. and $60^{\circ} 57'$ W. long., and about eighteen miles long by eleven broad, with an area of 140 square miles. The extinct volcano, called the Souffrière, rises to a height of 3,700 feet, and the Morne à Garou to 4,000 feet. Vegetation luxuriant, and perhaps more diversified than in any of the chain of islands from Tobago to Antigua, except Dominica.

Guilding, Lansdown. An Account of the Botanic Garden in the Island of St. Vincent. Glasgow, 1825. 4to. pp. 47, with three coloured views and plan of the garden.

Hooper, E. D. M. Report on the Forests of St. Vincent. London, 1886. Folio. pp. 13.

ST. LUCIA.—One of the most picturesque of the Windward Islands, lying south of the French island Martinique, in 14° N. lat. and 61° W. long. It is forty-two miles long and twenty-one in its greatest breadth, with an area of 243 square miles. The greatest altitude is about 3,300 feet, and here, as in St. Vincent, there is a Souffrière, or sulphur mountain. Maria, Gros, and Pigeon are adjacent islets. See note under Dominica.

TOBAGO.—Situated in $11^{\circ} 9'$ N. lat. and $60^{\circ} 40'$ W. long., and about twenty-three miles north-east of Trinidad. Twenty-six miles long by seven and a half broad, with an area of 114 square miles, and a maximum elevation of 1,800 feet. The virgin forests of the central mountain ridge are reported to be intact. A small collection of dried plants made by Mr. Meyer, contained several undescribed species.

Meyer, G. L. A Botanist's Home in Tobago. Gardener's Chronicle, n. s. xiv. (1880), p. 456. A fragment.

TRINIDAD.—This island is opposite the delta of the Orinoco, Venezuela and may be regarded as a detached piece of the mainland. It lies between 10° and 11° N. lat., and 61° and 62° W. long., and has an area of 1,754 square miles. The surface is undulated and hilly in parts, though the greatest elevation does not exceed 3,000 feet.

Crueger, H. Outline of Flora of Trinidad. London, 1858. 8vo. pp. 27.

Eaton, D. C. Fendler's Ferns of Trinidad: Coulter's Botanical Gazette, November 1878. A list of 114 species.

Devenish, S. Vernacular and Botanical Names of the Woods of Trinidad: Handbook of the West Indies and British Honduras, Indian and Colonial Exhibition, 1886, pp. 29–33.

Jenman, G. S. The Ferns of Trinidad: Journal of Botany, 1887, pp. 97–101.

TURKS ISLAND. See Bahamas.

VIRGIN ISLANDS.—An archipelago to the east of Portorico, the principal British islands being Virgin Gorda, Anegada, Jost Van Dyke, Tortola, Bieque, and Peter's Island; but altogether there are thirty-two islands besides "rocklets."

Tortola is in about $18^{\circ} 25'$ N. lat. and $64^{\circ} 40'$ W. long., and has an area of twenty-six square miles. It is everywhere hilly, with a maximum elevation of 1,600 feet.

Virgin Gorda lies a little to the north-east of Tortola, and is only ten square miles in area. It is hilly and barren in the eastern part.

Anegada is the most northerly of the group, and is a low coral island, with an area of fourteen square miles.

Eggers, H. F. A. The Flora of St. Croix and the Virgin Island. Washington, 1879. Bulletin of the United States National Museum, No. 13. 8vo. pp. 133.

WINDWARD ISLANDS.—The southern group of the Lesser Antilles, namely, St. Lucia, St. Vincent, Barbados, the Grenadines, Grenada, and Tobago.

BERMUDAS.—A chain of islands, twenty-five miles long, in the Atlantic Ocean, in 32° N. lat. and 64° W. long., and between 600 and 700 miles, from Cape Hatteras, North Carolina. They are of calcareous limestone, and nowhere more than 250 feet above the level of the sea. The main island, Bermuda, on which the town of Hamilton is situated, is about 9,000 acres in extent. Ireland, Boaz, Somerset, Tucker, Elizabeth, Goat, Castle, Nonsuch, Coopers, St. Davids, St. Georges, Coney, and Ferry Islands are all relatively small, and some of them little more than rocks.

Hemsley, W. B. Botany of the "Challenger" Expedition, i., part 1, (1885), pp. 1–128, tt. 1–13, and "Introduction" to the same work, pp. 46–49.

Lefroy, J. H. The Botany of Bermuda. Washington, 1885. Bulletin of the United States National Museum, No. 25. 8vo. pp. 141.

Reade, O. A. Plants of the Bermudas or Somer's Islands. Hamilton, Bermuda, 1885. 8vo. pp. 112 and index. Descriptions in English of the Indigenous and Naturalized Plants.

The probably indigenous vascular plants number 144, belonging to 109 genera and 50 natural orders. Eight species are apparently

endemic, but they are all closely allied either to North American or West Indian forms. A "Cedar" (*Juniperus bermudiana*) and a Palm (*Sabal Blackburniana*) are the only indigenous trees; the former constituting much of the wealth of the islands.

BRITISH GUIANA.—An irregular tract of north-eastern South America, extending from about $56^{\circ} 21'$ to $61^{\circ} 50'$ W. long., and from 1° to $8^{\circ} 30'$ N. lat., with an estimated area of 109,000 square miles. It includes the settlements of Demerara, Essequibo, and Berbice.

Aublet, F. *Histoire des Plantes de la Guiane Française.* London, 1775. 4to, two vols. letterpress, and 392 plates.

Schomburgk, R. *Versuch einer Fauna und Flora von Britisch Guiana.* Leipzig, 1848. 8vo. Flora, vol. iii. (Reisen), pp. 787–1,212.

im Thurn, E. F. *Among the Indians of Guiana.* London, 1883. 8vo. pp. 445, illustrated.

im Thurn, E. F. *Palms of British Guiana: Timehri*, iii. (1884), pp. 219–276. Also Reprint.

Oliver, D., and im Thurn, E. F. *The Botany of the Roraima Expedition of 1884: Transactions of the Linnean Society*, 2 series, Botany, ii., pp. 249–300, tt. 37–56. The descriptions repeated in *Timehri*, v., 1886, pp. 145–223.

Jenman, G. S. *The Primeval Forests of British Guiana: Gardener's Chronicle*, 3 series, i. (1887), pp. 541–543, 573–575, 637–639.

BRITISH HONDURAS.—A portion of eastern Central America, bounded to the north by Yucatan, to the west and south by Guatemala, and situated between $15^{\circ} 54'$ and $18^{\circ} 30'$ N. lat., and $88^{\circ} 10'$ and $89^{\circ} 10'$ W. long., with an estimated area, including the adjacent Cays, of 7,562 square miles. Turnesse is the largest of the numerous islands off the coast.

Hemsley, W. B. *Botany of the Biologia Centrali-Americana.* London, 1879–88. 4to. 5 vols., with 110 plates.

Includes British Honduras, though almost nothing was known of the botany up to that date. One of the most remarkable features in the vegetation are the pine groves down to the sea level.

Morris, D. *Colony of British Honduras.* London, 1883. 8vo. pp. 152, with a map.

Woods, Fibres, etc. of British Honduras. *Handbook of the West Indies and British Honduras, Indian and Colonial Exhibition*, 1886, pp. 158–168.

